Electricity on the Farm

A Monthly Magazine for the Progressive Rural Family

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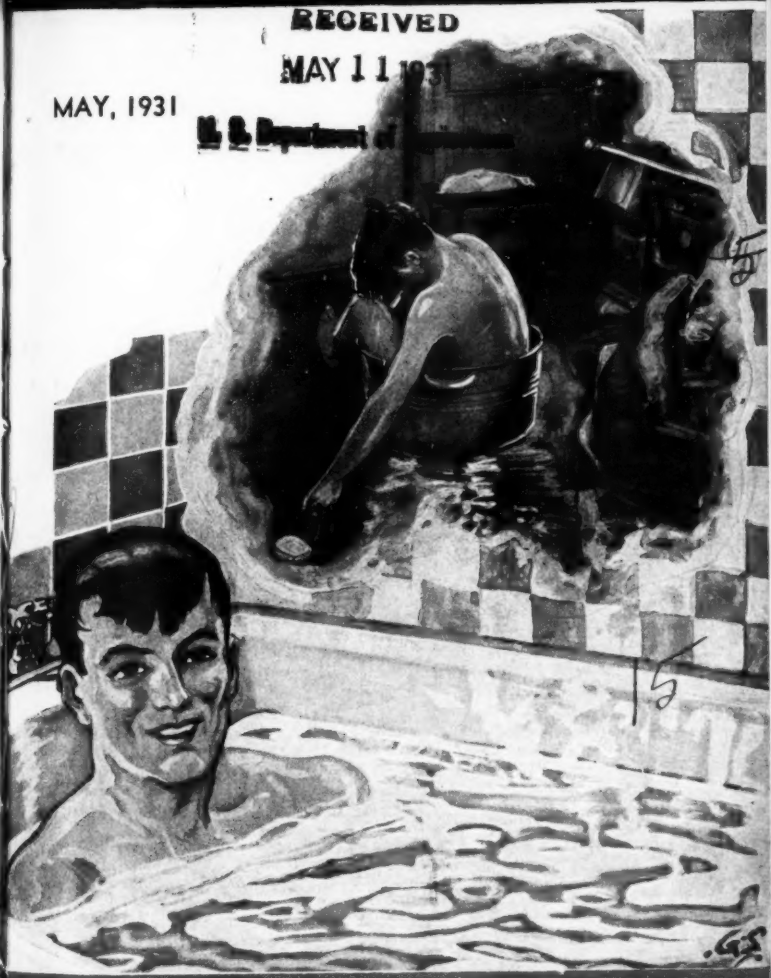

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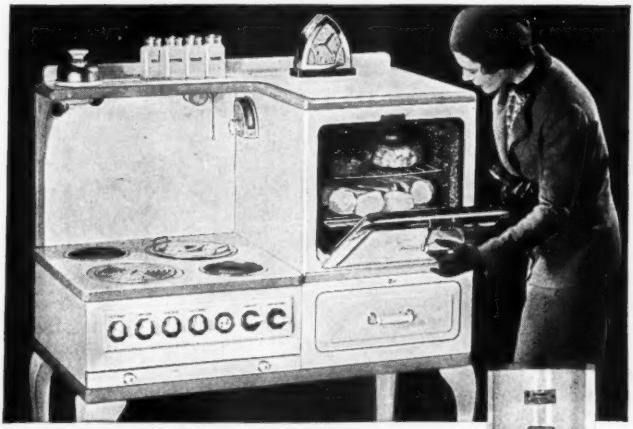

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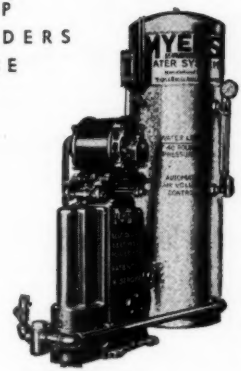

Fig. 2621

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Electricity on the Farm

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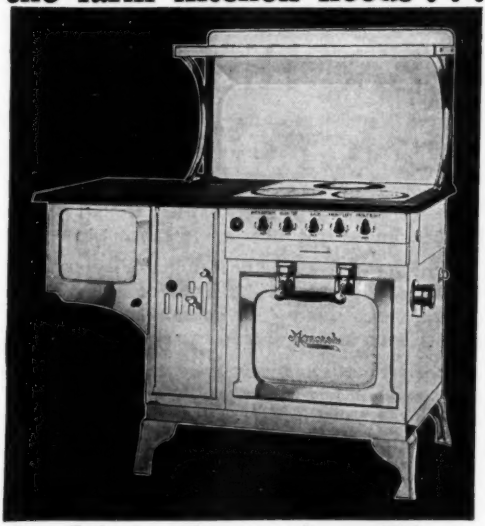

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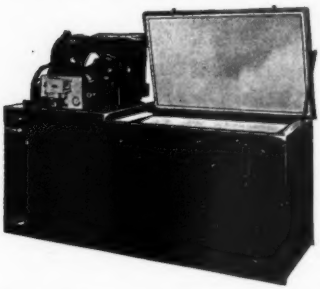

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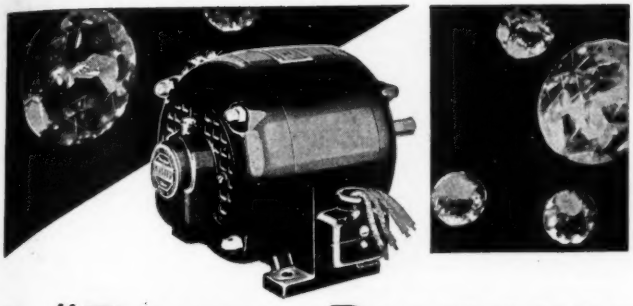

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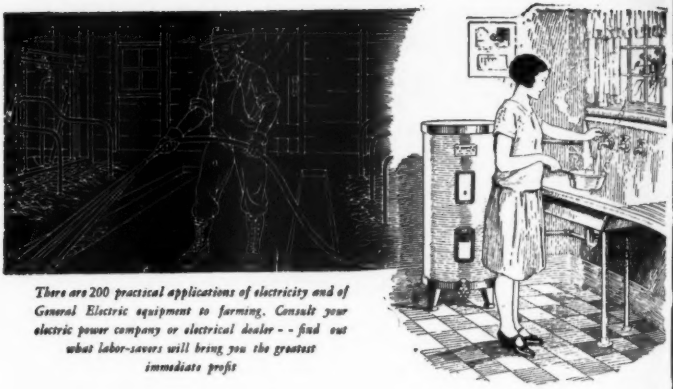

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SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES

Care of Equipment

Faulty separators were responsible for a loss of butterfat worth $6,503 in Iowa cow testing associations in 1930. On this basis, Iowa farmers, as a whole, lost at least $216,769 in 1930 because of poorly adjusted separators. According to Floyd Arnold, Dairy Specialist at Iowa State College, 12 per cent of all separators on Iowa farms lose butterfat the first year they are used and 50 per cent of the fifteen-year-old machines lose fat. Needless to say, a great deal of this loss could be avoided by proper care and adjustment of separators.

This probably is the most striking example of the value of paying proper attention to farm equipment, because it shows directly in dollars and cents the loss, or gain, as the case may be. But many other machines around a farm are just as wasteful with improper operation, although the losses they produce are not so readily detected. For example, an improperly operated fanning mill may not remove as high a percentage of weed seed as would the machine if kept in good state of repair and operated in the manner intended by the manufacturer. A few weed seeds getting into the seed grain may mean a lower price for the crop when harvested or additional expense of cleaning the grain before marketing it.

Manufacturers of farm machinery know in what manner best results may be secured from their products, and where they advise careful attention to maintenance and operation of the machine, instructions should be carried out to the letter.

The same thing may be said of electric motors. If a motor is supposed to operate best at three horsepower load, putting on additional load can only result in unsatisfactory operation with possible damage to the motor. Probably no factor in farm operations pays bigger dividends than intelligent care of farm machinery.

RAIN BARRELS

By E. R. MEACHAM

I WAS no more than four years old when I learned the importance of soft water. That was the summer oil cans were my favorite toys. The shining copper cans offered endless possibilities. When I held one in both hands and pressed against the bottom with my fat thumbs, it snapped "Ping" and out of it came drops of clear, golden oil with a sheen of blue and green in their depths.

A Youthful Experiment

Oiling became the most fascinating part of every farm job. I hung around the process absorbed in admiration, and I went off by myself to oil everything that moved and lots of things that did not.

One Sunday when we were visiting my aunt who lived up in the hills, I discovered the rain barrel at the corner of the house. I had the oil can in my hands, and squirted a few drops into the barrel in an aimless sort of way. The oil spread out over the surface of the water with gorgeous changing irredescent colors. This was better than soap bubbles. Thrilled and elated, I squirted more oil against the inside of the barrel and watched it run down to form a lovely pool floating on the rain water. I called on all the world to come and see my rainbows.

They came in all haste, filled not with wondering admiration but with horror at the havoc I had caused.

I was not too young to learn about water right there. For some reason, not immediately clear, everybody thought the water in that rain barrel was much better than the water in the squeaky green pump to wash Aunt Margie's clothes. They all said so in so many ways, so loudly, and so forcefully, that I have had considerable respect for rain water in a barrel from that day to this.

It was some years later that I began to learn why. Not until my family moved to a new farm in a limestone region, did I really see what hard water meant. Then when we washed our hands and faces, we saw a whitish curd in the wash basin. It took lots more soap to make a good lather. After a bath in the wash tub by the kitchen stove, a ring was left around the wash tub. We missed the clean, smooth feeling a soft water bath gives. Mother complained that she could not get her washings white and that the clothes were not so soft and sweet after washing as they used to be.

Then the neighbors taught her how they "broke the water" for laundry use. And on Sunday afternoon or evening she set out all the tubs and boilers or other big vessels she had and we boys lugged water from the well to fill them.

Softening the Water

Into each vessel she threw a handful or so of something she called "Pearl Ash," stirred it up thoroughly, and left it to do its work. In the morning there would be a flaky grey sediment in the tubs. We dipped the water off carefully without stirring it up and that was our supply of soft water for wash day.

Whenever a good shower came up, we set the tubs and boilers and dishpans under the eaves to catch the water, and in the winter the program was varied by bringing in quantities of clean snow and melting it on the kitchen stove. It made a sloppy mess in the kitchen and it seemed to take a wagonload of snow to make a tub of water.

Collector of Dirt

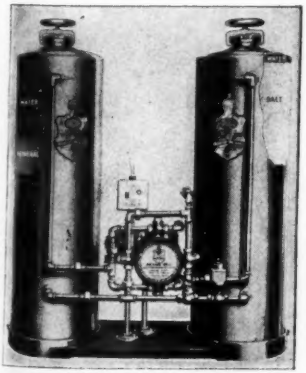
Some of our neighbors had cisterns but they had their disadvantages. It was difficult to keep them free from the dirt and bird droppings that washed in from the roof, and all too often, toads,

snakes, rats and even larger animals were drowned in them.

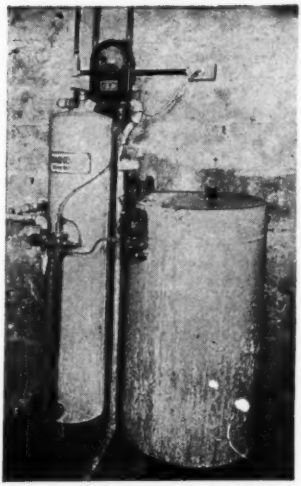
With the coming of individual water systems that give the farm home a reliable supply of running water in kitchen laundry and bath, the problem takes on a new aspect. To get soft water from a cistern to the faucets at the sink requires an entirely separate pump and motor in most cases. But that modern substitute for the rain barrel, a water softener, can be fitted right into a hard water supply system. It is more reliable than the cistern which must depend on rainfall for its supply, it provides much better and more sanitary soft water and it is frequently cheaper.

Zeolite the Basis of All

These water softeners are made in a variety of forms and under different brand names, but the principle of operation is the same in all of the common domestic softeners. The water is softened by running it through Zeolite. Natural Zeolite or "green-sand" is a mineral having the peculiar ability to take up lime and magnesium from water that is passed through it. If, when it has absorbed all of these minerals that it will hold, it is washed with a strong salt brine, it gives up the lime and magnesium again, and is restored to its original condition ready to soften more water.



Cut away view of a motor controlled softener showing salt in one tank and Zeolite in the other



Here is shown an automatic softener which meters the water as it enters the tank. An automatic time switch is also another feature of this outfit.

Artificial zeolites with different trade names have the same properties and are even better than the natural product because they work faster. These compounds look much like ordinary salt. Neither the natural or artificial Zeolite dissolves or is used up in the process of softening the water.

The first water softener I ever saw was a plain, steel tank about a foot in diameter and five feet high. On the top was a hole with a cover tightly clamped on. Down one side there was a complicated looking set of valves and pipe fittings.

The tank was standing in the basement not far from the furnace. It was connected to the water line and all of the water that went through the coil in the furnace went through it first so all of the hot water was soft.

"What is the hand hole for?" I asked, pointing to the clamp on the top of the tank. "Do you have to reach in there to clean it out?"

"Oh, no," the owner replied.

"there is nothing to clean out. That isn't a hand hole either, that is where we put the salt in."

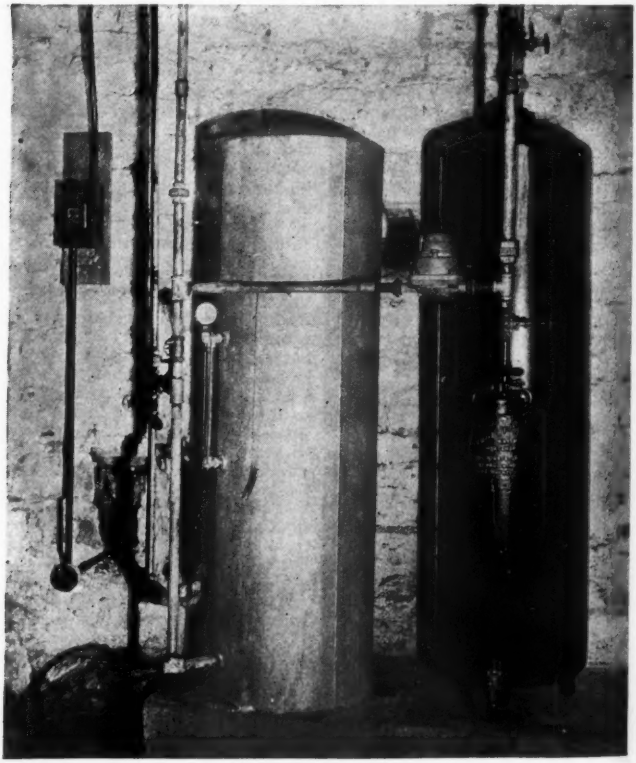
"Do you mean that you fill that big tank with salt?"

"Not at all," he answered. "The greater part of that tank is filled with about 100 pounds of the mineral that softens the water. Every two weeks, usually on Sunday afternoon, when there isn't much call for water, I come down here, shut off the water, unclamp the cover of that tank, and put in twenty pounds of just, cheap, common salt. After I clamp the cover on again, I set those valves so the water washes the salt down through the Zeolite and out the drain. That carries off the minerals that the Zeolite has taken out of the water. I let the water run until the salt is all washed away, too. Then I close the drain and screw up the valves so the water must pass through the Zeolite on the way to our faucets."

"So that's the way you recharge it," I commented.

"It isn't recharging exactly. They call it regeneration. It does not add anything to the mineral in the tank, but it does bring back its original properties."

That was a "salt in the head" softener.



The light colored tank is the water pressure tank; the dark one, the softener. Note the salt pot in front.

Bob Judson has another kind. He has two tanks instead of one. The closed tank containing the Zeolite is much like the tank of the salt-in-the-head machine. But beside it stands an open tank that holds a couple of hundred pounds of salt and 10 or 15 gallons of water. With all that salt in it, the water becomes a very strong brine.

When it is time to regenerate his softener, Bob moves one lever and opens the brine valve two turns. When the brine sinks to a certain mark on the tank, he shuts the brine valve and lets fresh water drain through the Zeolite for five minutes to wash out all the salt. Then he throws the lever back to running position—and he is ready to draw clean, soft water.

These brine tank softeners can be set up so they will almost take care of themselves. There is one kind that has a motor geared to the various valve controls. A switch in the wall at the kitchen sink turns the motor off and on. When the woman of the house decides that the dish water is not soft enough, she just pushes that switch and the little motor on the water softener down cellar opens up the valves in the proper order and at the right intervals, and without any further attention from her, shuts them off again, too. That motor is no bigger than a small muskmelon, but the way it handles those valves is almost uncanny.

Another Type of Control

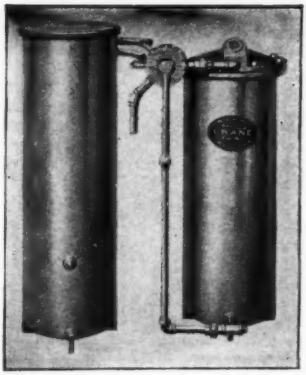
I found still another method of control on a new water softener that a friend of mine, Bert Baker, put in when he got his automatic water system.

I stopped to chat with him about it one day when he was out getting his mail.

"Hear you are trying to soften that lime water from your well," I said.

"Huh, I don't soften it," he grinned. "I've got it trained so it softens itself. All I do is to put a lot of salt in the brine tank twice a year. The rest of the time that water's just as mild as Moses. It would be ashamed to get hard."

"Well, I'd like to see how you do it." I told him.



A semi-automatic softener, requiring attention only for the regeneration process which is about twice a month.

"Come on, glad to show you," said Bert cordially.

I followed him down cellar and he showed me a brine tank softener that looked like Judson's and like the one that had a motor on it, except for one thing. It had a water meter on top instead of a motor. This water meter measures the water that goes through the tank. When a certain number of gallons have gone through the meter, a cam trips off the mechanism that shuts off the water, lets in the brine, shuts off the brine, lets in a rinsing bath and finally settles back to normal again.

The action of the brine and the Zeolite is just the same as it is in the other softeners but as Bert says, the meter makes the water soften itself. If the water were harder, the meter could be adjusted to start the regenerating process oftener; if it were softer, it could be set to let more water pass through the softener before it was washed out.

"I guess that's about perfect," I said as we were going upstairs.

"Yes, it's pretty handy," admitted Bert. "But there's another improvement on them now."

"What is that?" I asked. "Do they carry in their own salt?"

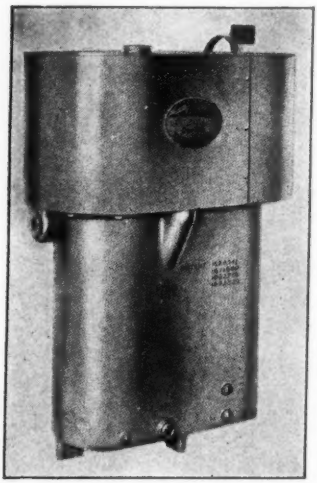
"No, they have a time switch so they regenerate regularly once in

twenty-four hours. Our outfit sometimes decides to 'Go soft' just when we want to use some water and that delays us a bit. But you can set these new ones to operate some time between midnight and morning when you will certainly not be needing the water. And that clock is electric, too, so you need never wind it."

The softeners are set in the plumbing somewhere near a basement drain so the water can run off during the regenerating process. The soft water is piped to the sink, the lavatory, the bath and laundry tubs, but not to the toilet nor to the pipe lines that lead outside of the house.

Nor is the cost of water made soft mechanically an extravagant thing.

Engineering Extension Bulletin No. 105 from Iowa State College, Ames, Iowa, goes into the question of cost very thoroughly. The author, Mr. Linden J. Murphy, quotes household water softeners at from $100 to $250. Some of the completely automatic ones will cost more. But $200 may be a fair average. Interest at 6% and depreciation at 4% would make the annual cost of owning the softener $20.00. The cost of running it for a family of average size where the water contains 300 parts per million of hardness, should not exceed a cent a day. Three dollars and a half should pay for a year's salt and even the current for an electric outfit. So the whole expense will often be under $25.00 a year.



This water softener regenerates automatically, and the power cost for operation is but a few cents per year.

This same bulletin quotes Professor Foulk of Ohio State University as estimating that a farm cistern, together with pump, pressure tank, and extra plumbing, costs nearly $300.00. The same interest and depreciation figures show $30.00 as the annual cost of owning a cistern, besides the slight cost of electric energy to pump the water out of it, and the much more serious job of keeping the cistern clean and in good condition.

Hard Water Expensive

It is even more expensive to do without soft water where the supply from wells is hard. The Iowa Bulletin points out that the finer fabrics now in general use are seriously harmed when washed in hard water. Common soap deposits a sludge in the pores of the cloth, making them look dirty, and tending to stiffen and rot the fabric. Stronger soaps that soften the water are apt to fade the colors and weaken the garments. This expense from using hard water amounts to a considerable item.

The scale formed in a teakettle where hard water is used shows what happens in hot water and steam heating plants and in household water heaters. Pipes are often so clogged with scale that water flow is restricted or even stopped. Repairs or replacement must be much more frequent. No large manufacturing plant would use hard water in its boilers, and any householder who does will waste fuel and shorten the life of his heating plant. Even an electric water heater will use less current if the water is soft.

There is still another cost of not having soft water that can be estimated in dollars and cents. That is the cost of the extra soap

(*Continued on page* 34)

OUR EXPERIENCE with a RANGE and WATER HEATER

By PEARL M. REIFSTECK

WHEN the equipment was being installed on the experimental, electrical line in which we were fortunate in being co-operators, the range was one of the appliances that we hesitated about having put in. We had heard that it was a luxury, its operating cost prohibitive and it would never be practical.

However, I felt that I wanted to give it a fair trial. At first I used the electric range as I did my coal and oil stove because I was determined to see what it could do. All the cooking and heating of water (including the wash water) was done on it and I soon saw that something was wrong. It was consuming entirely too much energy, but by that time I had fallen in love with it and wanted to keep it. So I decided to stop heating water with the exception of that needed for cooking purposes. Lo and behold, the amount of current used was reduced one-half! That proved that it is not practical for heating large quantities of water.

Skill Reduces Cost

The cost of operating the stove depends a great deal on the person using it. If one makes an honest effort to become skilled in its use she will have the highest degree of success in conserving current.

My range has closed grids, thus making it possible to turn the current off before foods are thoroughly cooked. Because of the fact that these hold heat for some time, it is possible to finish the cooking process, keep foods warm quite a while and to heat dishwater. Some people like the open coils and others closed, but that is largely a matter of preference. The open coils may heat up half a minute quicker, but the closed hold heat longer. The new hi-speed element is a decided improvement over the old.

An electric range is clean, safe, dependable, and convenient.

There are no fires to be built, thus no ashes, dust or dirt. Pans do not become black and the kitchen is easier to keep clean.

Because of the fact that practically no heat escapes, the kitchen is cooler in summer than is possible when using other types of stoves. This means a great deal on hot days when one must or can do the cooking for threshers, etc. Many think that it is not adequate to do all the cooking for many

extra men, etc. However, I prepare all of the meals at all times on it and mine is not the largest size, either.

What could be more convenient? Simply turn the switch.

The oven control is wonderful. The temperature is even and reliable. It enables one to be a better cook because guesswork is done away with. Foods do not require much water for proper cooking, thus the vitamins, flavor and food value are preserved. It is quite a saving to prepare as many meals as possible in the oven. Energy is saved by a well planned menu. It is not advisable to have a boiled dinner at the same time that we must heat the oven to bake biscuits or cornbread. Meats in the oven do not require basting or watching.

I have had success using a pressure cooker as this not only makes it possible to cook the entire meal at one time, but uses only one grid. I conducted some tests and found that the pressure cooker reduced the amount of energy consumed, often much more than one-half. Of course, this depends upon the foods prepared. Records kept on cooking such combinations as mashed potatoes, cabbage, and chile con carne or custard, escalloped potatoes, and Swiss steak show that there is a saving of from fifty to sixty per cent over the ordinary method of cooking.

A range equipped with a timer will prove invaluable to many because it is possible to put food in the oven, set the timer to turn off the heat when it is done, and go blithely on one's way to church or club, knowing that dinner will be ready on time. A very strong point in favor of the electric range is that it requires practically no care. I have found that in our case the cost of operating the range is higher than when using other methods of cooking, but feel that the many advantages justify the added cost.

Our 15-gallon thermos type heater is placed in the cellar.

Trying the Water Heater

At the present time we are trying out a fifteen-gallon thermos type water heater. This is equipped with a semi-automatic time switch. Because it is well insulated the water stays warm for many hours. I seldom reheat it except on wash days. Of course, the amount of water used depends upon the number in the family, their habits, etc.

It is safe, dependable, and very convenient. My gasoline water heater costs less to operate, but there is always that element of danger present, and the fact that it must be turned off. The switch for the electric is located just behind the electric range. Because of this I never have to go to the basement when I want to turn it on, as I must do when using the other. This means a great deal. It is possible to adjust the switch and forget about it, as it is automatic. What could be handier? In short, I would say that one of the strong points in favor of both the range and the water heater is the convenience.

The consumption of this heater for the past four months has been 130, 105, 99 and 93 kilowatts,

(Continued on page 23)

ELECTRIC HAY HOIST

Proves a Time and Labor Saver

By J. C. SCOTT

This hoist handles hay at 1/3 K.W. per ton.

AFTER hoisting hay with a team of horses, then by the power of his automobile, Mr. Earl Baker, who operates the Clover Field Dairy Farm, near Olympia, Washington, is now finding the electric hay hoist much more satisfactory than any other method of putting hay into the loft.

"I hoist hay into the barn 50% cheaper with the electric hoist," declares Mr. Baker, "than in any other way. It is more satisfactory to operate, too. The speed is more even, especially when the load gets up to where it is about to go on to the track. It takes very little current to operate the hoist and little care and attention."

This hoist is a home-made affair, devised by Prof. George Kable, formerly at the Oregon Experiment Station, Corvallis, Oregon, and is fully described by diagrams and pictures in Station Bulletin 255, "Electric Hay Hoists." It is so simple to operate that a man can control it by means of a rope, without ever getting off the wagon.

Works Well with Fork or Sling

It operates satisfactorily with either fork or slings, and it makes the use of a gravity pull-back for the fork convenient and practical as the brake will stop or slow up the carriage or fork at any place.

The hoist saves a little time in starting, stopping and in setting a fork. It makes possible the use of a little larger fork than can be easily set by hand since the fork can be put in position on the load largely by the aid of the hoist.

One-third kilowatt hour per ton of hay is required to operate the hoist, which costs Mr. Baker two cents or less per ton.

The power requirement for the hoist is one horsepower for each 135 to 150 pounds of load at a hoisting speed of 125 feet per minute.

While this article describes a home-made hoist, assembled some time ago, it should be noted that there are on the market at the present time excellent factory-built, electrically driven hay hoists.

Have INDUSTRIAL METHODS a Place on the Farm?

By JOHN M. LARSON
Rural Research Engineer

TALKING with the many farmers up and down the road conversation often turns toward the hard times on the farms. The one thing that is spoken of most often as the cause for hard times is the high cost of labor. Men who can be depended upon to take care of the chores and do the right job at the right time in the right way are hard to get. The rush season help is easier to secure. Some of the men work on a farm for a while and then get restless and want to go back to the towns or cities and work in the shop, store, or factory at any kind of a job at all, rather than stay on the farm. There must be some reason for this, since so many of them speak the same way.

Too Much Work

The men who leave the farms in search of work in other types of business say they didn't like the farms because they had to work all hours at work, most of which was a drudgery. They were not paid enough for the hours they were required to put in, is another reason. The latter reason is, perhaps, the most serious one and the one that appeals most to the majority of people. Why is it that manufacturing industries can afford to pay so much more per hour for their labor than the farming industry? There are several reasons, but the one item that contributes more than any other is, perhaps, the fact that the man in the factory is able, by the use of more modern, automatic machinery, to produce many more units per hour than it was possible for him to do when in the agricultural industry. The increase in output per man-hour in manufacturing industries over previous years is much greater than the increase in the output of the man-hour of a man employed in agriculture.

In order for agriculture to hold its own, it may be necessary to increase its wage scale to meet the city competition and thus get a better class of men into the business who will take pride in their work and list themselves as specially trained farm hands. Production per acre has increased to a point of over production and price fixing is out of control of the individual, so there is only about one other solution available to meet the increased cost of labor, that being the lowering of the cost of production by increasing the output per man-hour by the use of more labor saving machines.

The type of farming in which

Fig. 1. The method that takes time.

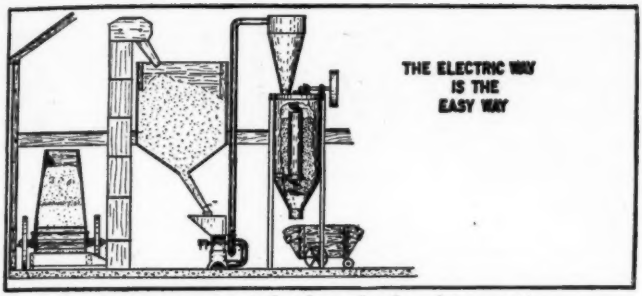


Fig. 2. An arrangement that keeps hand work to a minimum.

this is especially true is in the dairy or livestock farming, as the major part of the work done on these farms can be classed under what is commonly called chores. Field operations have been greatly simplified, but a man can not care for many more cows now than he could years ago.

Grinding feed for the cattle has always been a problem that has been hard to handle satisfactorily. Some farmers haul it to the nearby commercial mill for grinding. This method is expensive and requires too much time. Others use a tractor and a large mill and spend the larger part of a day with two men to grind enough for a few week's use. This method is also inconvenient and expensive. Starting the tractor and lining it up takes considerable time, and unless it is possible to grind for several hours, the time spent in rigging up is too great and up goes the cost of grinding. This is especially true in cold, stormy weather.

A little forethought and planning will eliminate a vast amount of labor in grinding feed. Rapid grinding does not always mean cheap grinding. If a couple of men must be on hand during the operation it is only natural that fast grinding is desirable to keep the labor cost as low as possible. In order to do this, it is necessary to have a large power unit and a large grinder.

Wouldn't it be far more advisable to spend a little time in planning and building a granary or feed house and eliminate almost all of the labor for all times, than to use a large power unit and always have to furnish a man to operate it? That is how our factories are built. Isn't every farm as much a factory, requiring business efficiency, as the place that produces shoes or farm machinery or any other product? Such Business methods are being used on many successful farms. Labor saving machinery is replacing the old and labor is being reduced to a minimum.

Reduces Cost

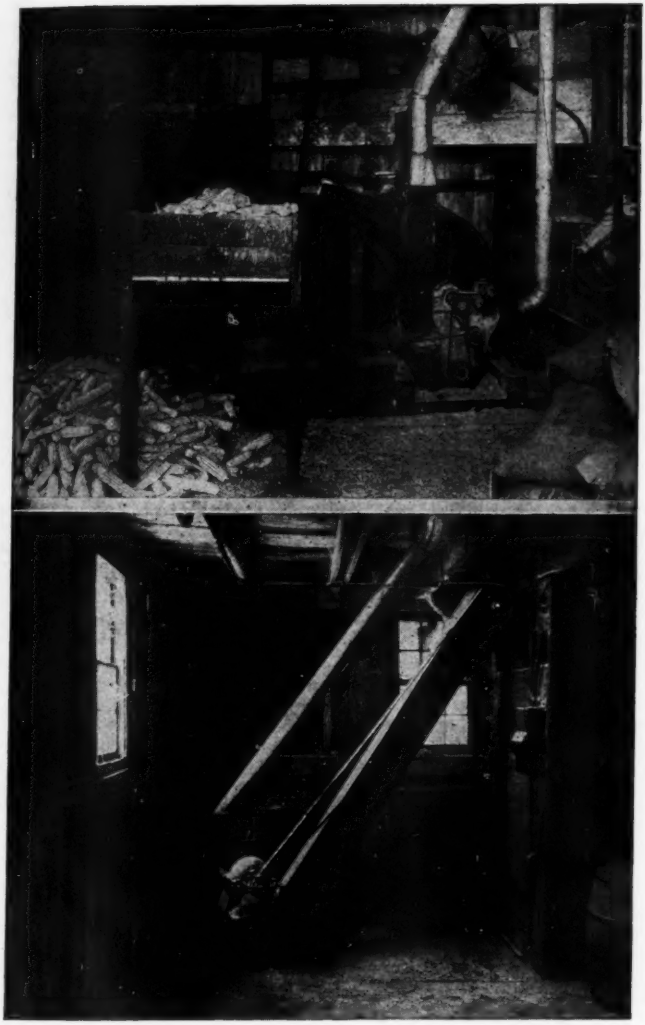
Many farmers are using this method in reducing the cost of producing dairy and livestock products by installing small feed grinders and making them work automatically. This does not require a great expenditure of cash or time. The three accompanying diagrams illustrate the contrast between the two methods. In Figure I, where the work is done by hand, as is so often the case, the feed has to be handled at least six times. You can figure for yourself how long it will take to grind and mix the feed that you use each day.

Compare Figure I with Figure II and notice that the feed is not handled by hand at all, unless it is to aid in dumping the grain from the wagon box into the boot of the elevator in Figure II, while in Figure I it is all handled by hand several times.

This does away with man labor almost entirely and the grinding can be done with a small grinder and a motor ranging from 3 horsepower to 7½ horse-power. The

Some Installations Which Are Saving

Upper Left: Motor driven elevator carries feed to storage bin above; Upper Right: Bin arrangement with trough feeding whole grain into mill and ground grain being elevated into dust collector and falling into bins below; Lower: Grinding alfalfa feed.



a Lot of Unnecessary, Hard Labor

Upper: This hammer type feed mill, driven by portable utility motor, receives grain from above, through pipe, or material to be ground may be fed directly into mill. Lower: Pipe from above carries grain to mill, and ground feed is delivered by conveyor to bin.

time required to do the work is then negligible and it costs no more as far as electrical energy is concerned, whether you are grinding 100 pounds per hour or 2,000 pounds per hour. There is a little in favor of the small unit, due to the fact that smaller and less expensive equipment can be used. The labor item is left out entirely, as such a grinder and mixer will operate without any attention whatever.

As for the elevators to be used, there are several on the market that are suitable and many farmers buy the hardware and make the cup and belt elevators at very low costs.

There are many types of good feed grinders on the market. Either buhr or hammer mills can be used very satisfactorily. The hammer mills are popular because they are usually supplied with blowers that can be used for elevating the feed after it is ground as that is the easiest way to elevate ground feed and these blowers are not expensive. These blowers can also be used to elevate the whole grain into the hopper bin above the grinder. The set-up shown in Figure III gives a suggestion of how a hammer mill can be used in conjunction with a blower as an elevator and a grinder as mentioned above.

These are merely suggestions and each farm building is a problem in itself. A farmer may secure suggestions and help from the rural service man of the power company serving his territory.

Grinding feed is only one job on the farm that can be done in a way similar to the way a manufacturer produces his goods. Electricity, with its automatic and flexible features, lends itself very readily to such jobs that help to make the farmstead a country factory.

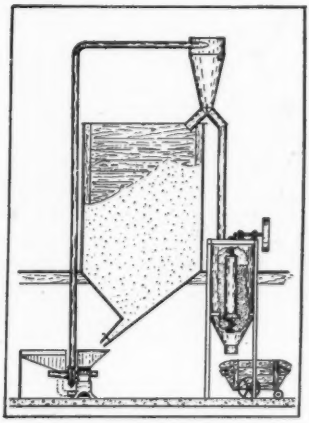


Fig. 3. Set-up of blower for elevating grain.

Electric Garden Tractor is Tested on Michigan Farm

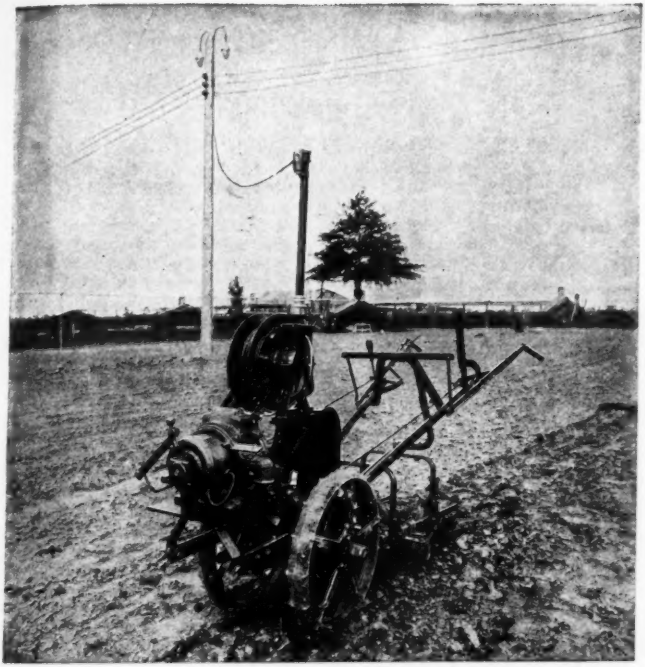
By Geo. W. Kable

THE electric garden tractor, shown in the accompanying illustration, was designed and built by Mr. Douglas Dow and other members of the rural service organization of the Detroit Edison Company. It was tested on a farm near Detroit. It consists of a standard garden tractor with the engine replaced by a 1 hp., 220 volt variable speed motor and a reducing gear of 9¾ to 1. The switch and controls for the motor are conveniently located at the hand of the operator.

Power Supplied Through Flexible Cord

Current is supplied to the tractor through a flexible cord which is kept taut by a spring driven reel mounted above the motor. The cord is carried up through a lead-in pipe with a swivel head which keeps the cable clear of the operator and gives freedom of motion to the machine. All parts of the tractor and electrical equipment are standard, with the exception of the swivel head and pipe which guides the cable.

The distribution line is carried down the center of the garden tract on standard pole construction. At each pole there is a drop-cord carrying the female end of a twist-lock separable plug. This plug hangs where it can be reached by the operator. When the ground



An electrically operated tractor is here shown on the farm of Herbert W. Collin, Florist, located in the territory of the Detroit Edison Company.

near one pole has been cultivated, the lead-in cable is pulled over and attached to the separable plug on the next pole.

The poles, which carry the distribution line, also support yard lights which furnish illumination for night work and for gathering vegetable crops in the morning before the dew is off. Vegetables are usually marketed early in the morning and the field illumination permits harvesting the vegetables when they are cool and in the best condition.

This small garden tractor is not perfected and is not ready to recommend for general farm use. It is, however, a step toward the solution of a problem which is of great interest to the agricultural industry. More than 70 per cent of the power used on farms is used for field operations. The ultimate possibilities of the farm electrical load will never be realized until some means has been devised for using electricity in the field.

Range and Heater

(*Continued from page* 16)

hours, respectively. In many, many cases we feel that the convenience and safety justify its use and that it is practical for all where there is a low energy charge. There are also possibilities for heating water in a well insulated tank when the current is connected with a time switch so that the heater will be in operation after midnight, when the electrical load is very slight and the energy used may be purchased at a lower rate.

RETIRING ON THE FARM

By J. E. WAGGONER

WHEN Calvin J. Waggoner decided to leave the beautiful Blueridge Mountains of North Carolina, and seek a homestead on the wind-swept prairies of Iowa, he made a very important decision. Likewise, my mother's parents no doubt pondered a long time before they journeyed westward from Wisconsin in 1872. But momentous as those early decisions were in shaping their lives and fortunes, my parents were confronted by an equally serious problem only a few years ago. The question was: Where should they live when they retired from farming the home place?

With that self reliance and assurance which characterizes the early pioneer, they weighed the pros and cons of moving to town or of staying on the homestead farm. There was nothing of great importance to draw them to town, and on the other hand, many things came to the forefront that indicated they should stay on the farm.

As Father and Mother reasoned, but I am inclined to think that sentiment had more to do with their decisions than reasoning, "We have lived here a long, long time. We planted the trees, shrubs and flowers. We planned and built our home. This has been our life —why not stay here?" As they said, "The banker, the attorney, or the business man does not move to the country when he retires. Why doesn't he? Well, it is because those conveniences that electricity brings are often not available in the country. With electricity, we can have just as comfortable a home on the farm as we would have in town." And the beauty of it is that they do have.

By retiring on the farm, they have been able to more gradually give up the strenuous activities of farm life than they would have, had they moved to town. A move to town would probably have meant an immediate let-up from farm activities. The fact that they were able to taper off in both the farm work and farm responsibilities, has been a very important factor in keeping them well and

(*Continued on page* 34)

Electric Reasons Why the Waggoners Decided to Remain on the Farm

Left: "The vacuum cleaner is a wonderful aid in chasing dirt," says Mrs. Waggoner. Center Left: The yard light is a real convenience for Mr. Waggoner. Center Right: The radio enables the folks to keep in touch with the outside world. Right: Mother has lights at her finger tips which is just another reason for staying on the farm.

ELECTRICAL HOUSEKEEPING

Conducted by
GAIL MEREDITH

Automatic Ice

THOSE of us who were getting started on the job of growing up in the famous nineties were taught to regard the waste of food as slightly less than criminal.

"A woman can throw out with a spoon what a man brings in with a shovel," my grandmother used to warn me darkly.

I have not heard anyone say that for years, but the fact remains that one of the most important jobs of the housewife today is still the prevention of waste and much of her concern is with the waste of food.

Saving food is far more than the exercise of a canny Scotch thrift. Our complicated civilization quite properly considers the preservation of food as important as its production.

The government sets up regulations to insure safeguards for food. Growers, shippers and retailers provide warmth or refrigeration and careful skill in packing so that the things we buy may reach our homes fresh and sweet and wholesome.

Then our job begins. Our grandmothers knew that cold was a good preservative. They carried the milk to the springhouse; they kept the butter in a cool dark cellar; they froze the meat at butchering time. They probably never heard of bacteria. It took centuries for men to discover what made food spoil. We know that these tiny little organisms are always gnawing away at the food we gather in our kitchens. If they get a good start on it before we do, if the food is in a warm, moist place, we may just as well give up the struggle. They will make it unfit to eat in short order. Sight, smell or touch shows us where they have been at work—but we just sum it up by saying, "It's spoiled."

Nothing entirely destroys these invisible invaders, but cold is an effective weapon in slowing up their attacks.

That is why some engineers maintain that automatic refrigeration is one of the outstanding contributions to this age.

A mechanical refrigerator is a heavily insulated storage box cooled with a motor-driven refrigerating unit that needs only to be connected to a convenience outlet to begin the production of a constant, dry cold.

After that, it pretty largely takes care of itself. Some models need occasional oiling and every one needs periodical defrosting of the chilling unit within the box, but aside from these routine matters, the refrigerating unit goes on about its job twenty-four hours a day, keeping that box cold.

Automatic refrigerators are taking the place of older cooling methods just as fast as folks can afford to buy them, because of the work they do. They save food, keep it fresh and crisp and appetizing.

They are more convenient than any other cooler women have used. They are designed to set right in

the kitchen where the food is prepared. They save time and countless trips up and down the cellar stairs, out to the bucket in the well, or down the hill to the springhouse. They save anxiety. When we prepare food and set it away in the refrigerator, we know that food will be sweet and sound to put on our tables when tomorrow comes—or even the day after that. When we are hurrying through breakfast some muggy morning, we never wonder whether the cream is sweet or if the milk has turned. Constant, dry cold preserves food.

Mechanical refrigeration makes luxuries of common foods. Milk is icy cold. Water or lemonade has ice cubes jingling against the glass. Salads are as crisp and cold as the best cook in the best restaurant you know can make them. Chilled or frozen desserts are easier to make than pies or puddings, and our families insist that they are easy to take.

* * *

How Much Current Will It Take?

WE had company for supper the other night, the Scotts from over in Deer County. I had not expected them, so I had to go out along about five o'clock and stir up a cake for dessert. Edith followed me into the kitchen and put on an apron to help. She watched with considerable interest while I creamed the butter and brown sugar in my new electric mixer. When I dumped in the rest of the ingredients and let the beater mix the cake, she was particularly impressed.

What Current?

"I've been wanting one of these beaters," she commented. "This one really works beautifully. How much current does it take?"

I stopped the motor and turned the beater up so she could read the name plate.

"60 watts." I pointed to the information stamped right on the plate. "It demands the same amount of current to run it that one of the lamps in your living room takes. Of course, the amount it will use in a month depends entirely on how much you use it. I think I use mine about an hour a day."

"Really?" said Edith in surprise. "Why, you've only run it about ten minutes for this cake."

"I know," I answered, "but I use it to make salad dressing, to whip cream, to mash potatoes, and cut the shortening into the flour for pie crust. The children use it to beat candy. It gets a lot of use in the course of a week."

"If you did use it that long, how much would that figure out?" asked Edith persistently.

Less Than 2 K.W. a Month

"Let me see. If I use 60 watts for one hour, that is 60 watt hours. Sixty watt-hours for 30 days is 1,800 watt-hours, and that is just 1.8 kilowatt hours for a whole month."

Everybody asks that question about electric equipment. And there are a great many answers, which is not strange at all. Suppose you have a family of four like mine. Will your grocery bill be the same as mine? Suppose you drive a Dodge car. Will our mileage and our gasoline consumption be alike? Hardly. The bills will depend entirely on the individual tastes and habits of our families.

But any group of people who work with budgets for household expenditures can tell you what the average grocery bill for a family of four is in various sections of the country.

There are plenty of companies and individuals who have kept accurate, detailed cost records on the operation of their cars, too. They can tell us to the fraction of a cent what it costs them to run a Ford, a Chevrolet, a Buick or a Dodge.

The national organization of electric light companies can tell you how much current you may expect any electrical machine to use, too. It is their business to know equipment and to know electricity. Out of their years of experience and observation has come the ability to estimate just how much current your electric iron will use and just how much a sewing machine motor will need in a month, and just how much current you may expect

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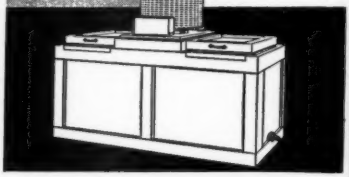

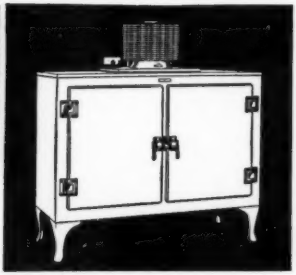

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to use in an electric range. These estimates are included in the following table. If you are curious about the electricity your own machines consume, look them up here. If you are wondering how much some new equipment might use, just run down the list and see for yourself.

Energy Used by Electric Appliances

	Kilowatt Month	Hours Year
Flat irons.....	4.16	50
Vacuum cleaners	3	36
Washing machines	2	24
Fans	2	24
Radio sets.....	7.5	90
Toasters	4 16	50
Percolators	4.16	50
Refrigerators ...	50	600
Space heaters...	3.33	40
Ranges	166	2000
Oil burners.....	20	240
Sewing machines	5/6	10
Ironing machines	10.4	125
Water heaters...	250	3000

* * *

A Made Over Room

Part II

(*Continued from April issue*)

THE room was lovely. The walls and the woodwork were soft pussywillow gray. The floor was painted a darker gray that gleamed in the sun. Against one wall was a bed whose woodwork was a soft, light brown, unbelievably smooth and shining. I looked across the room at the low chest of drawers that seemed to be the same wood and the same finish.

"Are those mine?" I asked, incredulously. "What did you do to them?"

Beth laughed.

"We took every speck of finish off and rubbed them with boiled linseed oil. Then we waxed them and rubbed, and rubbed.

The bed and the chest of drawers were both maple. They were not old enough to have the charm of early American pieces but they were plain and simple and good. Restoring to them the beauty of line and wood alone, gave them surprising distinction quite worthy of the old-fashioned blue woven coverlet Beth had put on the bed.

My little rocker with a new seat tacked neatly in place with brass headed tacks stood invitingly near one of the windows. Taking the varnish off and waxing and rubbing it till it, too, shone like satin, had knocked twenty-five years off its appearance.

"My dear, it is lovely beyond words," I said, hating myself for a selfish thought that I might have had all this loveliness myself if I had just gone about it.

"But the curtains, look at the curtains, Mrs. Meredith," begged Beth.

The simple glass curtains were made of a cheap, sheer voile.

"Seventy-three cents," said Beth, "on sale. But don't the drapes make up for them?"

They did. They had been made quite evidently, from another woven coverlet different in pattern but like in color to the one on the bed. They hung straight to the floor from big rings painted gray, strung on a wooden curtain pole just the color of the walls and woodwork.

"Didn't you hate to cut it up?" I asked.

"Didn't have to," answered Beth. "There was a seam up the middle. But it is worn quite thin, anyway. We'll get lots more joy out of it as a pair of curtains than we did with it stored away in my cedar chest."

I turned my attention to the floor.

"That's wax on top of the paint," said Dick. "That's one place I didn't have to rub. We brought out an electric waxer and rubbed that floor till it's as smooth as glass."

In front of the bed and before the chest of drawers were a couple of handmade rugs, one a braided oval, the other a hooked rug with gay rose colored flowers on a gray background with a black border.

On the wall, across from the bed, hung low to meet the awakening eyes of the guest who was to come, was a lovely Nutting picture of an apple orchard in bloom; under the trees a flock of sheep grazed and off to the left a little brook splashed its way over sun-touched stones.

"See the closet, too," and Beth

(*Continued on page* 34)

There's an F-M Water System to meet your needs . . .

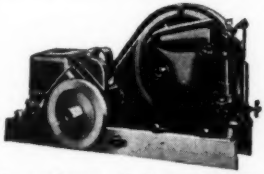
F-M automatic, electric water system. 210 gallons an hour capacity. Beautifully lacquered enclosure contains motor, pump and tank

Only $66

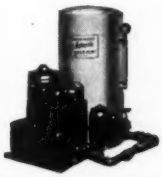
Cash, F. O. B. Factory

Also built in 420 gallon per hour size at $94.50 cash, F. O. B. Factory.

NO matter what your requirements may be—you will find there's a Fairbanks-Morse Home Water System to suit your needs *exactly*. The complete F-M line includes electric and engine driven plants from 210 gallons an hour up. Styles to suit every water supply—shallow or deep well, cistern, lake or stream. The dependable F-M guaranty covers both pumps *and* power. Prices are low—made possible by F-M volume production. See the Fairbanks-Morse dealer or write for nearest dealer's name. Address Dept. **5581**, 900 S. Wabash Ave., Chicago.



Engine driven, self-oiling, Type "B" deep well head. Illustration shows 1½ hp. engine connected to 6-inch stroke head with Fairbanks-Morse "Flex-Mor" Drive. Also available with F-M Electric Motor Drive.



F-M Direct-connected, electric, deep-well water system. To be used where the water lift is more than 22 feet. Made in five sizes. Automatic.

FAIRBANKS-MORSE
Home Water Systems

Our Neighbors

Intimate sketches of women who find in the farm more than just a place to live.

Everyone knows some farm woman that the rest of us would be interested in. If you do, won't you write me about her for OUR NEIGHBORS *column? If she does something unusual or interesting, tell us about that. Tell us everything you can think of about her. Yes, gossip as much as you like. If you can get a picture of her, or her activities, send that too.*

GAIL MEREDITH.

* * *

A Two-Thirds Portrait of Ethel Tonry Carpenter

By Kavin Holmstrand

ALMOST successful homemaker, manager of an ever-increasing poultry plant, author, and accomplished cook with *twenty-two* prizes from recipe contests to her credit! These are but a few of the unusual accomplishments of this versatile young girl—for she is yet a girl — but twenty-three years of age. I saw her with her Airedale pal, Jeremiah Quincy Whiskerface, romping across the wooded knolls of her old New England home at Cochituate, Massachusetts. I have learned from a rather authentic source that Mrs. Carpenter's first novel, a historical romance entitled "My dear Hamilton—" will soon be ready for the press. Upon my questioning as to her various literary successes, the modest reply came, "Oh, my writing is not at all a marvel. Other women do much finer things." This, I later learned, is typical of her point of view. She bears her honors lightly.

Ethel Tonry Carpenter

My first meeting with this young woman came about a few weeks ago when I visited her unannounced as she was busy spraying the roosts of her husband's model henhouse. Wearing blue denim overalls, canvas gloves, with a man's cap set at a jaunty tilt over her blonde curls, the picture she made was truly attractive. Not even the male attire with its drab coloring and harsh lines produced an air of masculinity, however, for Mrs. Carpenter is as exquisitely feminine and dainty as a medieval court princess. Tall, lithe, fair-skinned, and possessing that rare species of changeable blue, gray, greenish eyes, one can with no strain on the imagination visualize her in royal surroundings.

Although she has had to combat ill health at every turn in her romantic career, an indomitable fortitude continues to triumph over all.

"You appear so radiantly happy and enthusiastic," I remarked, as she chuckled at a tame hen's curiousity in my galoshes. "How do you remain so very cheerful?" Even as I spoke the devastating traces of the physical pain she so bravely endured crept into her eyes.

"One always has so many things to be thankful for," she returned. "And the best that is in life costs nothing. It is the little common things that give the most sublime joys to those who can take the time to appreciate them. There are all the wondrous things of Nature; one cannot but be grateful for them—and a heart filled with gratitude is one brimming with God-given pleasure." In a half-whisper as though soliloquizing she added, "I love the songs of rapturous birds,

the soft whisperings of these old trees, the gentle patter of the rain. I love all mankind; I love the earth —in short, I love everything."

It was now that the soul of the poet had revealed itself. With a supreme effort I smothered a veracious rejoinder, "And everything loves you!"

"Of your many hobbies which is your favorite?" I questioned, after the manner of a dyed-in-the-wool interviewer.

"My Hubby is my hobby," she answered, a merry twinkle in her eye. If a faint suggestion of the words, "Lucky Hubby'" strayed from my lips, I beg not to be held culpable.

Accomplishes Many Tasks

The morning I called, Mrs. Carpenter had dressed some fowl for market, baked a *superb* apricot cake from an original recipe, composed two quaintly appealing poems, and put the six-room colonial house in order, all these as a part of her morning duties. Noticing the conspicuous absence of a man about the premises, I inquired as to where the host might be hiding.

"Ah, my dear Hubby is far away," I was informed. "He has gone to Florida on business for the winter."

"And do you remain here alone during the long, cold months?" I asked, realizing that all too many women would have swooned in hysteria at the mere mention of such a lamentable catastrophe.

"Mr. Whiskerface, Kitty Kelly, (the gray tiger cat) and I maintain very comfortable quarters here throughout the winter. Our three important selves eat, sleep, and make merry at leisure," she confided.

I thought of the bulky grain sacks to be emptied, coal to be carried, snow to be cleared away, and fires to be attended and glanced meaningly at the slim, tapering fingers and small wrists of my hostess' hands.

"I know what you're thinking," she smiled. "But please don't look so wretchedly miserable about it all. Really, it's heaps of fun living like a crazy old hermit. Whiskerface and I have the gayest times! We romp, and race, and tear around like mad. We dare not act so silly when Hubby's home. He'd think we were unhinged mentally, (and perhaps we are)."

As she spoke her bright eyes grew ever more luminous. The fires of youth unconquerable flushed her cheeks. Every muscle and nerve in her body was tense and alert, eager to be off to battle against the winds. Today I read a lengthy scholastic essay prepared for a leading national magazine, under the title of which appeared the name of Ethel Tonry Carpenter. Half reckless, vivacious child—half studious, sophisticated genius, Mrs. Carpenter is a living proof that the farm woman has at last come into her own.

* * *

The Boomerang

Ethel Tonry Carpenter

A bit of song passed from my lips,
It joined a breeze and blew the ships
Far out at sea till it became
A veritable hurricane.

It swept o'er arid desert sands
O'er burdened camels, caravans
E'en mingled with the dust of kings
And other old Egyptian things.

In one strange land so far away
(Mayhap 'twas mystic old Cathay)
A baby's fevered brow it cooled,
Witn poppy-laden breath it soothed.

And then my song returned to me
As gay and happy as could be,
For it had made a sad world smile—
Oh, songs, indeed, are quite worth while!

What Is Success?

To achieve what the world calls success a man must attend strictly to business and keep a little in advance of the times.

The man who reaches the top is the one who is not content with doing just what is required of him. He does more.

Every man should make up his mind that if he expects to succeed, he must give an honest return for the other man's dollar.

Grasp an idea and work it out to a successful conclusion. That's about all there is in life for any of us.—*E. H. Harriman.*

WINNERS of March Contest First Prize—$25.00

**"When Dad's electric milker is such a success,
The next generation demands nothing less."**

H. G. Easterly, R. 2, Carbondale, Ill.

The following titles have been selected as winners of the $5 cash prizes:

"Smiling at his little scheme, To Use the 'lectric milking machine." Elmer E. Wrucke, R. 1, Horicon, Wis.

"You've got the system, my little son, Milking is easy when electrically done." Clara A. Lunde, R. 1, Zumbrota, Minn.

"Even sonny has faith, you see, In milking cows by electricity. Mrs. H. L. Inwards, Parker's Prairie, Minn.

"The electric milker has made such a stride, You can now milk a cow from either side." Eleanor D. Hays, Shippensburg, Pa.

"'Tis plain to be seen that both father and son, Believe in machines electrically run." Mrs. F. J. Osborn, Winnebago, Ill.

RULES for May Front Cover Title Contest

For the best title to this month's front cover illustration, a cash prize of $25.00 will be awarded.

In addition, we will pay $5.00 for each of five titles given honorable mention.

In case of a tie, each winning contestant will receive the full cash prize to which he or she is entitled.

The winners will be announced in the July issue.

Only the farmers or members of the farm family, to whom this magazine was sent, are eligible.

Only one title may be submitted.

Use the form below or write your answers on a plain sheet of paper in similar form.

Contestants must answer question (a).

Write plainly and send your suggestions to the Title Editor, ELECTRICITY ON THE FARM, 24 W. 40th St., New York, before June 1.

My title for the May Front Cover picture of ELECTRICITY ON THE FARM is.....

.....

.....

.....

.....

.....

(a) Check which types of dealers you would consult if buying

	(1) Electric Clothes Washer	(2) Electric Milking Machine
Hardware Dealer	.....	.....
Implement Dealer	.....	.....
Power Company	.....	.....
Electrical Contractor	.....	.....
Mail Order House	.....	.....
Manufacturers Agent	.....	.....

Name ..... **R. F. D.**.....

Post Office..... **County**..... **State**.....

Announcing the

Latest De Laval Achievement

Low-down, waist-high supply can

No gears—direct drive from motor to bowl spindle

Requires oiling but once or twice a year

Only five moving parts

Has the famous De Laval "Floating" Bowl

THE DE LAVAL "ELECTRO" SERIES

IN conformity with the De Laval policy of providing a cream separator for every need and purse—each machine, regardless of price, the best of its class; each machine backed by 53 years of separator manufacture and leadership—we are pleased to announce the De Laval "Electro" Series.

The "Electro" is the first all-electric cream separator and is the ideal machine for the large dairyman or small milk plant. It is graceful in design, beautiful in appearance, and a mechanical marvel. It is low-down, waist-high, and has only five moving parts. The bowl spindle is driven direct from the specially designed vertical motor, thereby eliminating all gears. The bowl spindle is an ingenious device within which the two ball bearings are completely enclosed and protected from dust, dirt and moisture. The "Electro" requires oiling but once or twice a year.

When power is snapped on, the "Electro" picks up speed and runs quietly, smoothly and uniformly. It is equipped with the famous De Laval "Floating" Bowl.

Made in three sizes, completely equipped for attaching to any electric light socket.

No matter what your separating requirements may be, there is a De Laval Separator which will do your work better and at less cost than any other.

The De Laval Separator Company

New York	Chicago	San Francisco
165 Broadway	600 Jackson Blvd.	61 Beale St.

Rain Barrels

(*Continued from page* 14)

that will be required. Mr. Murphy shows that water having 300 parts per million of hardness requires 62 pounds of soap just to correct the hardness in 1000 gallons of water. This is the soap needed just to soften the water before any is available for cleansing purposes. He estimates that this extra soap for the average family costs $16.80 a year.

Because of its advantages of convenience, reliability and economy, I have developed as much respect for the modern water softener as I suddenly acquired for Aunt Margie's old rain barrel so many years ago. Moreover, they are practically as free from the need of oiling.

Retiring on the Farm

(*Continued from page* 24)

healthy in both mind and body. There is much in favor of retiring on the farm amid the familiar environments of life's active years.

The radio keeps them constantly in touch with the passing events of the day. The good music that is almost continually on the air, is a great source of joy and company to them. They go to church in their own home every Sunday. Electricity has made it possible for Mr. and Mrs. Calvin J. Waggoner to retire on the homestead farm in O'Brien Co., Iowa, which was acquired from Uncle Sam in 1871, and to enjoy the conveniences of town life without its inconveniences.

"I have observed," says Father, "that many of the farmers who have moved to town, would be happier back on the farm, if they had the conveniences that electricity brings." "We have seen many changes since 1871, when we had to burn hay for fuel, to the present time when it is no trick at all to tune in and hear the President of the United States or some other noted man, or to hear music from across the waters. As great as the changes which the radio has brought, and as much as we appreciate the radio, we feel that to have electricity for lights and other home conveniences, means more to us."

A Made Over Room

(*Continued from page* 28)

proudly threw open the door.

Now, closets are indispensable but tiresomely humdrum affairs; up to that minute, I had never seen one with any claim to beauty or distinction. This had both. It had been painted gray, like the room, walls, ceiling; all of it. Each of the shelves that rose across one end of the closet was gray and had a black edge; the long rod that held the clothes hangers was black as ebony.

I sat down rather heavily in the sewing rocker that had gathered dust in my attic for fifteen years.

"Of course, the painting took most of our money," said Beth, "but after we got that done and had your furniture all polished up like museum pieces, we found we had quite a lot of stuff around the house we could use. I made those rugs last winter, you know. The mirror and the picture we took from the living room. This bowl," she picked up a small gray bowl with a glassy black rim around the top, "was a mixing bowl that I've painted to hold sweet peas and roses this summer."

I got up slowly and went over to look more closely at the tapers of lovely soft blue that stood in glass candle sticks, one on either side of the mirror.

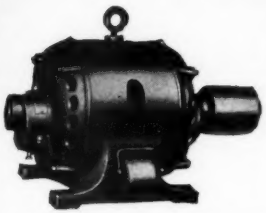
"What a lovely color."

"I like them, too," said Beth. "Those candle sticks were wedding presents and when I saw those candles I forgot eggs were down to eighteen cents a dozen and I just got them."

I turned to go.

"Do you think she'll like it?" Beth's voice was a little wistful.

"Like it?" I exploded, stumping off down stairs. "Of course, she'll like it if she's not blind or crazy. I wish you'd come over and paint me up, too, when you get your garden in."



5 Horse Power Century Type SC Squirrel Cage Induction 3 and 2 Phase Motor

They Keep A-Running

Rely on Century Type SC 3 and 2 Phase Motors for uninterrupted service.... They are so ruggedly built that they "Keep a-Running" even when subjected to the hard usage common to farm equipment. . . . The armatures are commercially indestructible. . . . The Bearings last. They are made from Phosphor Bronze castings, and provided with machine-cut figure-8 oil grooves, which insure even oil distribution over all bearing areas.

Ball Bearings, grease lubricated, can also be furnished.

Century Type SC Squirrel Cage Motors are built in sizes from ¼ to 250 horse power.

CENTURY ELECTRIC CO.
1806 Pine St. St. Louis, Mo.
40 U. S. and Canadian Stock Points and More Than 75 Outside Thereof

Century MOTORS

ANOTHER NEW DAYTON MODEL

THE DIRECT DRIVE SHALLOW WELL SYSTEM

If you are among those who appreciate sound design and mechanical efficiency in the machinery you buy, you'll find a lot of satisfaction in just looking over this newest DAYTON Direct Drive Water System. It is the last word in compactness and it's a regular demon for hard work. The driving mechanism is completely enclosed — the automatic air volume control and the built-in fresh water valve are valuable improvements. The pumping capacity is 250 gallons per hour, and you may choose either a 12 gal. or 30 gal, galvanized tank. All at a surprisingly low first cost and small operating expense.

A DAYTON Water System is an investment in home and property improvement that will constantly yield to you and your family bounteous dividends in convenience, comfort and saving of time and effort.

Your name and address on this coupon will bring an interesting folder to you in a hurry. Send it in today.

Dayton WATER Systems

The Dayton Pump & Mfg. Co. E.F.5
Dayton, Ohio.
Gentlemen:

Please send complete information, prices and illustrations of DAYTON Water Systems.

Name .....

Address .....

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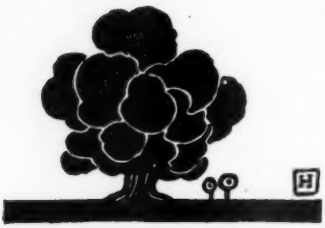


Under The CHESTNUT TREE

Wrong Lead

Parson: Deacon Jones, will you lead in prayer?"

But Deacon Jones was sleeping so the Parson said a little louder: "Deacon Jones, will you lead, please?"

Deacon Jones (coming to): "Lead yourself, I just dealt."

Two Scotsmen had not encountered each other for twenty years.

"Well, well," said one, "this is an historic occasion. We'll have to wet it."

"Aye," agreed the other, "so we will. But ye'll forgive me for remindin' ye that I paid last time."

Aviation Student: "What happens, sir, if the parachute fails to open?"

Tough Sarge: "You come back, sonny, and I'll give you another one."

James: "I'm the happiest man alive. I've got the finest wife in the country."

John: "Yes, that does make a man happy, having his wife in the country."

"Bachelor"—A man who doesn't have to hang all his clothes on one hook in the closet.

Excavation work on a big sewer had reached a low and mucky place and the Italian laborers were having their troubles. Suddenly there rose a shout from Tony:

"Kum ear! Kweek! bringa da shov! bring da peek! Pete's stuck'n da mud up t'is knees!"

"B'gad, tell 'im to wade out," growled the foreman.

Tony: "He no canna wade! He's wrong end up!"

Young wife: "The post office is very careless, don't you think?"

Sympathetic friend: "Yes, dear, why?"

Young wife: "Hubby sent me a postcard yesterday from Boston, where he is on business, and they've put the Montreal postmark on it."

Attorney (to woman witness after cross-examination): "I hope I haven't troubled you with all these questions?"

Witness: "Not at all. I have a small boy of six at home."

"How nice it must be to work beside so many cakes!" exclaimed the benevolent old gentleman to the little boy in the confectioner's shop. "But don't you ever feel you would like to eat some of them?"

"Oh, no, sir," was the reply. "That would be stealing—but I just gives 'em a lick now and then."

"We are now passing the most famous brewery in Berlin," explained the guide.

"We are not," contradicted the American tourist, as he hopped off the sight-seeing bus.

Young Thing: "I have brought this book back; mother says it isn't fit for me to read."

Librarian: "I think your mother must be mistaken."

Young Thing: "Oh, no, she isn't. I've read it all through."

"Did Mr. Edison make the first talking machine, Pa?"

"No, my son. God made the first talking machine, but Mr. Edison made the first one that could be shut off."

Juror: "I can't serve on this panel, Judge. Just one look at that man convinces me that he is guilty."

Judge: "That's not the prisoner. That's the prosecuting attorney."

Barnum Was Right

A certain New York restaurant man may be given credit for a rather novel window display. This man didn't have much money for advertising so he bought the biggest fish bowl he could get hold of, filled it with water and put it in the window with this sign:

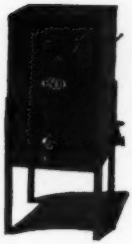
"Filled with invisible goldfish from Argentine."

It took seventeen policemen to handle the crowd.

What does man love more than life,
Hate more than death or mortal strife,
That which contented men desire,
The poor possess, the rich require,
The miser spends, the spendthrift saves,
And all men carry to their graves?
Answer: Nothing.

BACTERIA CONTROL

The Secret of DAIRY PROFITS



Your cows give you clean, wholesome milk—and it is within your power to keep it that way. Three things are necessary . . . hot water, sterilized cans and pails, and proper cooling.

To control bacteria, pails and cans need HOT water washing and thorough dry-air sterilizing between milkings. Then the milk must be quickly cooled and stored at below 50°.

The ESCO Electric Water Heater gives you a ready supply of hot water in the milk house just when you want it. The ESCO Dry-Air Sterilizer provides an electrically heated and insulated cabinet for sterilizing and storing cans and pails. The ESCO Electric Milk Cooler quickly cools milk to below 50° and keeps it cold until shipped.

See your Power Company, Electric Refrigeration Dealer, or write us for full information.

ESCO CABINET COMPANY
WEST CHESTER, PA.

Pat. Nov. 15, 1930

The Standard of the Better Dairies

$75 will buy a genuine DELCO Waterboy

($78.50 with galvanized tank. Prices f. o. b. factory)

● **Small down payment. Easy terms.**
Write today for free literature.

DELCO APPLIANCE CORP., Dept. C-28, Rochester, N. Y.

1-16

TAYLOR BROS. ELECTRIC CHURNS

You didn't know you could get an Electric Barrel Churn? Well, you can and a good one. Sizes 10-15-20-25-35 and 50 Gal. Extra strong, well built frame with metal bearings.

The simplest, most convenient and efficient Rotary Churn ever made. No belts, pulleys or gears. Mounted on casters—drain faucet and everything. Sizes 1-2-3-6-8 and 10 Gal.

Sold by Power Companies or write

Taylor Bros. Churn & Mfg. Co., St. Louis, Mo.

Questions and Answers

Conducted by
H. J. GALLAGHER
Agricultural Engineering Dept.
Michigan State College

Note—Readers are invited to send in questions which will be answered in the order received.

Question: *If a person should switch a light on and when it is on, unscrew the bulb in the socket, would it take juice?*

Cornelius Kamminga,
Hudsonville, Mich.

Answer: No, if the light is turned off by a switch, the bulb unscrewed in the socket or burned out, the result is the same, no electric energy is used.

Question: *Are the wires of a circuit connected when a lamp is burning?*

Answer: Yes, the two wires forming a pathway for electric energy must be connected together before electricity flows. One wire is connected to the "ground," the other to the feed wire of the service. Connection of the two wires is provided for at convenience outlets and lamp sockets. When a lamp is lighted or an appliance operated the connection is established. The connection is known as a resistance because it limits or resists too great a flow of electricity between two wires where the contact is made. The more lamps or appliances used on a circuit at one time, the less the resistance offered and consequently more electricity passes along the wires of the circuit. The rate at which electricity flows is measured in amperes and only fifteen amperes should be permitted on No. 14 wires commonly used for lighting circuits. For this reason, the circuit should be protected by a 15 ampere fuse that "blows" as soon as the circuit is overloaded.

Question: *In your magazine,* ELECTRICITY ON THE FARM, *you often mention egg cleaners employing sand blast. Can you furnish me with the name and address of a firm making such a machine, or specifications for building one in the home shop?*

Roger Mills.

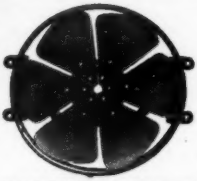
Answer: I am not familiar with the process of cleaning eggs with a sand blast nor do I know of any manufacturer of this equipment. My only information on the subject is that it is a specialized method used only in large poultry plants or by commercial firms. Clean straw in the nests and clean poultry houses are the most practical methods of producing clean eggs on the farm.

Question: *How can a washing machine motor be used to operate a sewing machine?*

Miss Alice Derousie,
Oswego, N. Y.

Answer: Mount the motor to the frame work supporting the foot treadle so that the one-inch grooved pulley on the motor is in a straight line with the grooved pulley on the sewing machine. A switch mounted on one side of the cabinet and connected through an extension cord to the motor will start and stop the motor. This assembly will operate the sewing machine at a higher rate of speed than is commonly used and has the further disadvantage of permitting only one speed. A better practice would be to purchase the small electric motor designed for that particular operation. These motors are operated by a foot control similar to the accelerator of a car and work in like manner, as the harder they are pressed the faster the machine

(*Continued on page* 40)



VENTILATION
Means Larger Profits

The importance of correct ventilation cannot be ignored.

Equipped with dust-proof motor, and propeller designed to give maximum delivery of air, MARATHON "OK" Fans are specially adapted for the dairy barn, chicken coop and barn ventilating system.

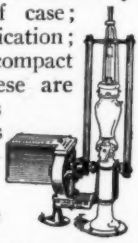
16"—1160 RPM or 1740 RPM — $55
18"—1160 RPM or 1740 RPM — $65
20"—1160 RPM only — — — $75

MARATHON
ELECTRIC MFG. CO.
WAUSAU, WIS.

Cullman *Electric* PUMP DRIVE

Long Service Without Expense

"Not a cent for repairs" is a frequent statement of a Cullman Pump Drive user. Accurately made gears and pinions; careful assembly; weather-proof case; oil bath lubrication; best motors; compact designs — these are the reasons why repairs are seldom required.



Folder on Request

CULLMAN WHEEL CO.
1342 Altgeld St., Chicago, Ill.

The Green Knight

PAUL WATER SYSTEM
New Low Price!

$75

THE Paul Green Knight Water System provides the wonderful convenience of an *unfailing water supply, instantly available,* for the kitchen, laundry or bath! Mighty satisfying too—to have plentiful water, with adequate hose pressure, for sprinkling the lawn, fire fighting or washing the car.

THOUGH miles removed from city water facilities, you may, by the installation of a Paul Water Supply System, *enjoy the same modern bath, laundry and kitchen convenience as your city neighbor.* Best of all, you can enjoy this Water System while you pay for it. Only a small amount down and 12 small monthly payments buys it. *Write today for more details.*

Sold on Easy Payments

FORT WAYNE ENGINEERING & MFG. COMPANY
Fort Wayne, Ind.

Pumps and Water Systems — *Water Softener Heaters*

Ft. Wayne Engineering & Mfg. Co.,
***1722 N. Harrison,* Ft. Wayne, Ind.**

Send complete information and prices on Paul Green Knight Water System . . . and Easy Payment Plan.

Name.....

Address.....

Shear this way for More Wool

With a Stewart Electric Shearing machine, one man can shear 150 sheep or more a day. Plugs in at any light socket. ¼ H.P. motor supplied for any voltage.

STEWART

ELECTRIC Shearing Machine is quiet, powerful, vibrationless; strongly built for long years of satisfactory service. Most economical in use.

GET FREE CATALOG

Tells why Stewart Shearing Machines get more wool from same sheep—save time—and produce wool grading higher. Also describes Stewart Electric and Hand Power Machines, the world's largest, best line.

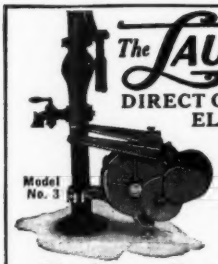
CHICAGO FLEXIBLE SHAFT COMPANY
5524 Roosevelt Rd. Chicago

World's largest makers of Clipping and Shearing Machines

10% to 15% more wool

The Inside Back Cover is for your convenience

Why not use it?



The LAUSON DIRECT GEARED ELECTRIC JACK

Model No. 3

Built like a high grade auto transmission.

Also interchangeable motor or gas engine.

The Lauson Corporation
700 Michigan St., New Holstein, Wis.

Questions and Answers

(*Continued from page 38*)

goes. These motors are not expensive and it is a simple operation to connect them to the sewing machine and they are easily removed when foot treadle operation is desired.

Question: *I would like to know if a ¼ H.P. motor would pull a barrel concrete mixer.*

Oscar C. Mayer, Lancaster, Pa., R. No. 4.

Answer: I interpret your question to mean a concrete mixer of the capacity of one barrel of mixed concrete, generally known as a one-bag mixer. If this is so, a ¼ H.P. motor is large enough. A one-barrel mixer, meaning four sacks of cement to the mix, would require a one H.P. motor.

Who Was Efficient?

An employer, noted for his energy and lack of tolerance for loafing in any form, visited his stock room and found a boy leaning idly against a packing case, whistling cheerily and with nothing at all on his mind. The boss stopped and stared.

"How much are you getting a week?" he asked with characteristic abruptness.

"Twelve dollars."

"Here's your twelve. Now get out!"

As the boy nonchalantly pocketed the money and departed, the boss turned to the chief clerk and demanded:

"Since when has that boy been with us?"

"Never, that I know of," was the response. "He just brought over a note from Dull & Sharpe."

MORE PROFITS *from Chicks*

For breeders, poultry-raisers, hatcherymen—extra quality, extra profits in Petersime Electric Hatched Chicks. Petersime Incubators give unmatched results — lowest operation costs—built in five sizes from 1,400 to 15,984 capacities.

Write for NEW FREE Catalog. No obligation.

Ira M. Petersime & Son
EF-35, Gettysburg, Ohio

Checking Up on the Cream Separator

One of the most important services rendered by testers of herd improvement associations is the monthly test on cream separators owned by members. Audits of the accounts of persons handling funds at regular intervals are expected and there is no good reason why the work of a cream separator should not be checked accordingly. Most creameries will gladly cooperate in making such a test for their patrons.

It has been found that the loss in skimming may be three times greater where the separator is not washed every time it is used, yet during the cold weather many make a practice of washing only every other day. Minimum losses and higher returns are assured if the milk is separated before it becomes cold. Where an electric motor or gasoline engine is used to turn the machine and where it is not located too far from the barn, it pays to start separating before the milking is finished. Warm water should be used to flush out the bowl and in extremely cold weather it will help to warm the bowl before pouring in the milk. In no case should the bowl be left filled with water where there is danger of freezing.

Mrs. Tellit: "Cousin Dorothy, you know, always wanted to have a little baby daughter so she could name her 'June.'"

Mrs. Askit: "Yes. Did she do it?"

Mrs. Tellit: "No. The man she married was named 'Bugg.'"

NEW WAY TO CHURN

Thousands are changing to this simple, convenient, modern way to churn. It's the famous DAZEY principle adapted to electrical operation. Ends the drudgery. Just turn the switch. Made in 2, 4, 6 and 10 gallon sizes. Write today for catalog and further information.

DAZEY CHURN AND MFG. CO., Dept. 27
Warne and Carter Avenues, ST. LOUIS, MO.

A NEW ELECTRIC
PUMP JACK
By STOVER

Representing our years of experience in building successful farm machinery. A small, compact, powerful motor-driven unit. Direct-connected, gear driven motor. ¼ or 1/3 H.P. Convenient, smooth, quiet, fool-proof.

Write For Catalog!
Write today for our latest catalog on Pump Jacks and other electric driven machinery.

Stover Mfg. & Engine Co.
171 Lake Street
Freeport, Ill.
Established 1862

Also makers of Windmills, Feed Mills, Engines, Corn Shellers, Saw Frames, etc.

IDEAL
LABOR SAVING HAY HOIST

Takes the place of man and team operating hay carrier, stacker, etc. Furnished either Single Drum, or, with Pull-Back Drum for returning empty carrier. Operated with any motor or engine from 2 H.P. up.

UNIVERSAL HOIST & MFG. CO.
200 East 14th Street Cedar Falls, Iowa

Write for complete details —today.

Fully guaranteed—
10 DAYS TRIAL.

BUY DURO NOW

And settle the water supply problem forever—only a few dollars down payment brings fresh, running water under strong pressure, piped into your house. Makes possible water in the kitchen, bath, inside sanitary toilet, laundry, water for sprinkling, lawn and garden, live stock and chickens. Write for illustrated electric water system catalog.

THE DURO COMPANY
537 E. Monument Ave., Dayton, Ohio

DURO
Automatic Water Systems

Clean and Safe

My electric range is my favorite servant because of its many merits. It is efficient, economical and beautiful, a combination rarely found in servants. It will cook a meal without any attention and never asks for a day off. I have other electric appliances but they all need attention while operating.

It is the cleanest and safest method of cooking, we may truthfully say. It is always on the job.

MRS. GEO. D. CROCKETT,
R. No. 2, Hansen, Idaho.

* * *

Eliminates Dust

Another spasm of thankful praise is bursting to be heard. This seems to be "company week." I had unexpected guests three evenings in succession and could enjoy them thoroughly without thinking of the mess to be cleaned later.

My vacuum cleaner just rolls along picking up sand, crumbs, and ashes until it seems the rug smiles up at me. And oh the glorious feeling that Junior may play right beside me, because there is no danger of dust. In fact the air smells cleaner and fresher.

MRS. CLARENCE H. GOEDJEN,
R. 2, Two Rivers, Wis.

* * *

A New Game

Time passes pleasantly for me on wash day by means of a game I play with my washing machine. While merrily doing its work, I am trying to keep even with other work.

In the pre-electric farm days one was finishing the wash at 2 P. M. or so, and oh, so tired and the house was a mess. Now, when the washing is done, the other work is apt to be done also, and sometimes most of the ironing.

With the meals on time and an evening out makes one fully appreciate electricity, and makes the washing machine a wonderful electrical servant.

MRS. H. E. WAID,
Colebrook, O.

Serves Entire Family

My choice of all the electrical servants is the electric pump. It serves all the family, not to mention the live stock, every day in the vear. It reduces labor, increases sanitation, encourages the consumption of more water, and so increases the efficiency and lengthens the life of its owner. It is very economical, since the cost of the electricity required is much less than the value of the labor necessary to pump a like amount of water by hand. No one should do without this electrical servant.

MABEL BURDSAL,
R. R. 2, Madison, Ind.

* * *

Safeguards Health

My refrigerator is really an essential electrical servant because it safeguards the family's health the year around. Food, its preparation and preservation, is the housewife's greatest problem. Good food is essential to health and to efficiency in work and study.

The electric refrigerator prevents waste of food by high temperature or by freezing, so the housewife may buy larger quantities and plan for balanced meals. She can use ice-cubes or prepare crisp salads and frozen desserts at any time.

It is economical to operate, easy to keep clean, a thing of beauty and a joy forever.

MRS. HANNAH S. RHEA,
Shepherdsville, Ky.

CLASSIFIED ADVERTISING

The LYON ELECTRIC COMPANY manufacture electric poultry equipment exclusively. Long, practical experience in the highly developed California rural electric field enables us to furnish quality devices at reasonable prices. The LYON line includes: Brooders—Incubators — Egg Testers — Burglar, Temperature and Power-off Alarms — Heating Elements—Thermostatic Supplies—Time Switches—Wiring Supplies. Write for catalog today. LYON ELECTRIC COMPANY, 2075 Moore Street, San Diego, California.

MERCHANDISING SUPPLEMENT
Electricity on the Farm

Vol. 4 MAY, 1931 No. 5

A BIG FIELD FOR WATER SYSTEMS

The Wisconsin Power and Light Company made a survey a short time ago covering water systems on electrified farm houses to determine in how many instances water was available under pressure from water systems.

The results of the survey reveal the following interesting information:

		Per Cent
Total number of elec. systems and jacks...	1507	34.0
Total number of hand pumps.....	2076	47.0
Total number of wind mills.....	280	6.3
Total number of gas engines.....	340	7.6
Total number of springs and fountains.....	72	1.6
Total number of steam pumps.....	8	.18
Total number with no wells.....	147	3.32
Total for Eastern Division.....	4430	100.00

If this proportion can be applied over the entire country, there is still a tremendous field for electric water systems. But slightly more than one-third of the farms surveyed had modern water systems.

In view of the fact that the water system is probably the most coveted addition to the farm establishment made possible by the arrival of high-line service, there should be plenty of business for the water system manufacturers in the farm field during the next few years.

Farm Equipment Committee Reports Progress

At Chicago Meeting of N. E. L. A. Farm Equipment Committee, Topics Discussed and Reported

THE N. E. L. A. Farm Equipment Committee held its last meeting of the year prior to the Atlantic City Convention at the Edgewater Beach Hotel in Chicago on March 25th, 1931.

Chairman Dexter reported on the questionnaire sent out to power companies which aimed to determine the gross and k.w.h. sales, the amount of equipment sales made, the number of employees devoting their time to farm work, the percentage of sales being made by independent dealers, the financing methods used, the educational methods being used, and finally whether a market analysis was being undertaken. It was pointed out that a review of the questionnaires sent back showed that the companies doing the best job were the ones with the best rounded out development programs, and in each of these cases the program included a market analysis. Ten of the companies were chosen to be written up in detail, so that their methods can be studied by all companies interested in farm development work. This job is to be done by Dr. E. A. White and it is hoped that it will be completed some time in the summer.

After some discussion the Committee decided that the plan of issuing an approved list of manufacturers of electrically-operated farm and household equipment would not be feasible, since manufacturers not listed might consider the rating plan to be used an unjust one. The Committee suggested that ELECTRICITY ON THE FARM publish a directory of manufacturers as their own contribution to the industry, which suggestion will be followed out.

Dr. White reported that there soon would be available a complete list of the key rural electric development men in each of the N. E. L. A. member companies. This list is being prepared to encourage inter-company correspondence and exchange of ideas.

Market Analysis Being Prepared

The need for a comprehensive market analysis in order to show manufacturers what a sizeable market is being developed was discussed at some length. Because utilities are already being asked to fill out so many questionnaires, the Chairman has tried to get organizations already sending out questionnaires to make a division for Farm Equipment. However, this Committee felt that further steps should be taken to interest some organization in obtaining this information, which will undoubtedly be done.

Cooperation with farm equipment dealers was also discussed, and the Chairman was authorized to appoint a sub-committee, after reviewing the matter with the Executive Committee of the N. E. L. A., to develop a plan of procedure.

Full details about the Electric Farm Equipment Directory, suggested by the N. E. L. A. Farm Equipment Committee, will be given in the Merchandising Supplement of the June Issue of "Electricity on the Farm."

RURAL ELECTRIFICATION Salesmen's Forum

Conducted by TRUMAN E. HIENTON

Electrical Harvest Aids

SUMMER months bring busy days for the farmer for it is during that time that he must harvest his small grains and his hay crops. During this harvest season usually comes the peak demand for farm labor and as a natural result long days of work for those on the farm. It is but logical therefore that he is interested in the use of power-driven machinery at such a time to reduce the demand for labor where it can be done economically.

Electric power and electric motor-driven farm machinery are playing an increasingly important part in aiding the farmer to do his harvesting with a minimum amount of labor. Power companies and implement dealers are assisting farmers and will continue to do so by providing them with adequate electric service, motors of proper size and construction, and farm machinery which is economically feasible to use.

Electrical Harvesting Aids

The use of the motor-driven hay hoist and grain elevator are just as important to the farmer as the feed grinder and ensilage cutter, two of the machines commonly accepted as suitable for electric drive. Other machines of lesser importance but which are used in harvesting work are the hay press and the husker-shredder, both of which may be driven satisfactorily by electric power. The threshing machine may also be driven by one or more electric motors but not usually by one of the same size as is required for the other machinery mentioned.

It is indeed fortunate for the power company as well as the farmer that so many farm machines of certain sizes at least may be driven by one size of motor. Since the 5-horsepower motor will operate all of these machines satisfactorily except the thresher (can be operated without self-feeder and wind stacker) it enables the farmer to more easily justify the purchase of such a unit.

Machinery Replacing Hand Labor

A large percentage of modern combine-harvesters cut and thresh small grain and unload it into trucks or wagons without moving it by hand. Corn-husking machines strip the ears of corn from the stalks, husk them, and, like the combine, drop the grain into the vehicle which transports it to crib or granary entirely without human handling. It is not an uncommon sight, however, to see grain harvested by these machines unloaded by hand from truck or wagon today, even though the most modern machinery has been used to save time and reduce labor costs in its harvest. Many farmers realize how much more cheaply and quickly power-driven machinery does this work and are replacing the laborious hand method by the use of elevators operated by mechanical power.

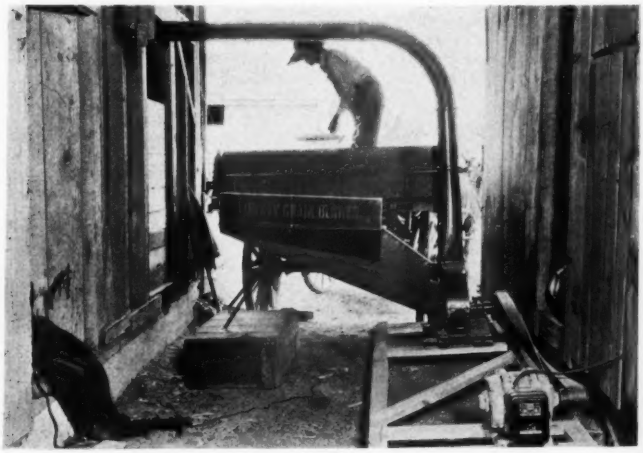
One type of elevator commonly used through the corn belt on farms, where small grains as well as corn is grown, is the vertical cup type. Such an elevator is installed inside a building to lift any grain dumped into a permanent pit located at its base up into cribs or bins which may be built along or above the driveway. A favored type of construction for the building in which the elevator is located is a rectangular shape with

driveway running through the center of the building lengthwise, corn cribs flanking the driveway on either side to the eaves, with grain bins built over the driveway. Such construction results in an economy in building cost since it can be built higher than would be possible without the elevator. The elevator is located at one side of the driveway near the middle of the building, with the pit extending under the full width of the driveway, usually of capacity adequate to handle an entire load of grain. An electric motor or gas engine (where electric service is not available) is most often used to operate the elevator.

Grain Handling Reduced

An installation of this kind is located on the farm of Edward Layden in Tippecanoe County, Indiana, about eleven miles southwest of Lafayette. The cribs in his granary hold 7,000 bushels of corn and the four bins above the driveway, 5,000 bushels of small grain. This building houses all of the grain produced on the farm besides any additional that may be purchased for feeding. Located in the building are a feed grinder and corn sheller all of which including the elevator are operated through a series of line shafts by a 7.5-horsepower motor which is permanently installed. Labor in handling grain has been so reduced that the owner and one hired man are together able to feed and care for approximately 100 beef cattle, over 100 hogs, 65 breeding ewes, and 8 or 10 horses and mules during the winter. The use of the cup elevator and one or two floor conveyors eliminates all handling of grain by hand from the time it is dumped from the wagon into the elevator pit, as it is brought in from the field, until it is ready for feeding.

In the handling of ear corn from the wagon to the cribs, from the cribs to the sheller, and to the grinder when required, the elevator probably saves the greatest amount of labor required to prepare any grain from feeding. Mr. Layden has cooperated with Purdue University during the past several years by keeping records of his farm business. From these figures he declares that the costs of using the elevator and other equipment in the granary, which include interest, depreciation, and tax



An electrically operated grain elevator and cleaner on the dairy farm of E. J. Kendall, Route 2, Indianapolis, Indiana.

charges as well as operating cost, are considerably less than for any other methods of doing the same work. An interesting feature of this installation both to farmers and power companies is that the use of the elevator and motor which drives it is not limited to the harvest season. It has been made an integral part of the equipment required to carry on the feeding program which is conducted during the major portion of the year.

Portable and Stationary Units

In addition to the cup type there are several other types of elevators: the drag, the tubular, and the pneumatic. All of these may be driven satisfactorily by electric power. Two of them, the tubular and pneumatic, are used only for shelled and small grains. The drag type is used essentially for handling ear corn and not for small grains, although it is used to some extent for that purpose. All of the three types are for portable use but in some cases are used as stationary units. However, their portability is one of their chief advantages since they may be used at several different cribs or granaries during one season. The hoppers of these types of elevators are seldom, if ever, below the surface of the ground. Lifting jacks are used to raise the front end of the wagon or truck which delivers the grain to the elevator, so that the grain slides out into the hopper.

The pneumatic type which in reality consists of a blower, somewhat similar to that on an ensilage cutter or husker-shredder, which has been equipped with a hopper, is perhaps the newest type of elevator and one which has but recently appeared on the market. Such an elevator driven by a 5-horsepower motor is illustrated in an accompanying picture taken on a farm near Indianapolis, Indiana. This machine was purchased for use during the 1930 season and gave good satisfaction in handling small grains. It was particularly well adapted for use on this farm because a large amount of small and shelled grain is handled each year and also since the storage bins are not all located in one building.

Reports have been made of the use of various machinery equipped with blowers for elevating small grain. Professor H. J. Gallagher of Michigan State College in his "Progress Report No. 4" reports the use of the drum of an ensilage cutter with the knives removed and a hopper installed on the side of the drum in the place of the feed table to convey oats 81 feet horizontally and 12 feet vertically. A similar case in which a Wisconsin farmer used his ensilage cutter driven by a 7.5-horsepower motor to elevate grain, received directly from the thresher, into his upstairs storage bin was reported by E. R. Meacham in the August, 1930, edition of *"Electricity on the Farm."* A considerable amount of investigational work has been conducted by Professor F. W. Duffee, University of Wisconsin, on the use of small hammer mills for elevating grain. The results of his work have resulted in the manufacture by at least one company of a hopper which may be attached to its mill for use in receiving grain to be elevated.

Elevator Tests Conducted

Recent tests conducted by Professor Harry L. Garver of Washington State College on pneumatic and tubular elevators are contained in a progress report of investigational work carried on during 1930. These, while only progress reports, indicate that blower elevators of at least one type may be satisfactorily driven by motors of 3-horsepower capacity. These results combined with others reported from Iowa and Illinois would indicate that the blower type of elevator may require slightly more energy than do other types to elevate given units of grain. However, the portability and ease of adjustment to various elevations and horizontal distances of the blower type are distinct advantages which may result in its selection by the farmer.

One rather important use of the elevator on farms where grain is harvested by combines and stored in bins is that of its use in moving

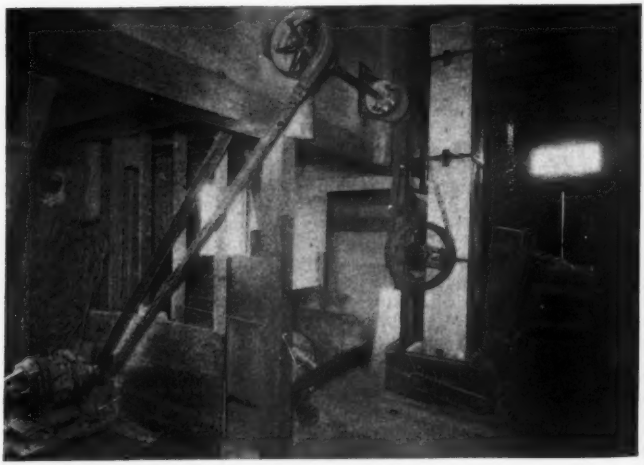
grain from one bin to another to prevent heating due to excess moisture or other causes. This is particularly true through the corn belt region where the use of the combine has increased so rapidly during the past few years.

Time and Labor Saving

Another machine which through electric drive is helping to solve the labor problem during harvest time is the hay hoist. The hay fork powered by horses was a decided relief from the useless back-breaking work of unloading hay by hand pitching. The replacement of the horses and their driver by the motor and hay hoist which are frequently operated by the man on the load, is still another step ahead in time and labor saving. With the use of the motor and hoist, the team is no longer unhitched from the load at the farm to pull the fork, nor the rake team brought in from the field when the team on the load could not be led past it in the bank barn.

There are two types of hay hoists, single and double, classified according to the number of drums. With the double drum hoist the hay carrier is returned to the load by power drive, while with the single drum the return is made by hand or counter weight or both. Professor Harry L. Garver, after a considerable study of motor-driven hay hoists concludes that "In comparing the relative advantages of the single and double drum hoists, it might be said that where the hoist is to be used for handling hay only, in small or moderate sized barns or stacks, the double drum has practically no advantage over the single. In large barns where the hay or other material is lifted and carried a considerable distance, it is not always practical to have a counter weight for returning the fork. In this case the double drum type of hoist is preferable." Bulletin No. 139).

Some investigational work has been conducted at Michigan State College to develop the design and construction of a hay hoist on a different principle from the single and double drum hoists. A motor and the hoisting and traveling drums were attached to a special hay car, which travels on a standard hay track. This outfit was built similar to a crane so that it



The motor does the heavy work of grain handling on this farm.

could hoist and also travel in a horizontal direction. A single push button was used to control all operations of this machine whether for hoisting or traveling. It has not as yet, however, been placed on the market by any manufacturer.

Professor Garver found in a survey of motor-driven hay hoists in the state of Washington that the sizes of motors employed to operate them varied from 2 to 5 horsepower. The size of the unit used in the Michigan hoist was one horsepower. The weight of the load and the time required for lifting affect directly the size of motor which will be required. Following tests conducted at Oregon Agricultural College these figures were issued in Bulletin 255, "A 3-horsepower motor will therefore hoist a maximum of 800 pounds load and a 5-horsepower motor will hoist in excess of 1,200 pounds at a cable speed of 250 feet per minute, which would give a hoisting speed of 125 feet per minute."

An Unusual Combination

On a farm located near Windfall, Indiana, an unusual combination, which includes a motor-driven hay hoist, is used in making hay. A general-purpose tractor equipped with a sweep rake transports the hay directly from the field to the barn where the hoist lifts it into the mow. The owner, Mr. Byron Legg, says that he uses three men as his hay-making crew, one man in the mow, one driving the tractor and sweep rake and the third operating the motor on the hay hoist. This outfit makes hay at the rate of about three tons per hour. His cost for electric power averages slightly over three cents per ton, with electric energy costing 5 cents per kilowatt hour.

After the hay harvest and threshing are completed comes the task of baling hay or straw. Baling in some cases is done to reduce the amount of storage space required for the material and in others to facilitate its marketing. Neither hay nor straw is marketed at any great distance except in bales at the present time. The item of baling therefore becomes a necessary one where either hay or straw is to be shipped by rail. A rather small amount of hay may be delivered in bulk by truck but straw which is delivered is almost invariably baled. Straw purchased by the many straw-board factories through the Middle West is in bales.

Tests conducted at the New York State College of Agriculture showed that the average demand of a 17 inch by 22 inch hay press (the largest size), driven by a 5-horsepower motor was less than five horsepower. The load on the motor as revealed by instruments is an intermittent one with the maximum demand coming as the rammer compressed the hay (*Electricity on the Farm*, Dec., 1928). The capacity of the press during the trials was about 40 bales per hour averaging 114 pounds each or 2¼ tons per hour. The amount of energy used was 2.2 kilowatt hours per ton.

The type of press commonly used is of the continuous type. It has a horizontal compression chamber which is tapered through which a plunger forces the hay or straw. Such a press, originally driven by an engine, has been used on the R. W. Miller farm near Sunbury, Ohio, during the past two years and was driven by a 5-horsepower motor successfully. A crew of three men using this old machine handled approximately one ton per hour. The motor was belted directly to the flywheel of the engine, which formerly drove the press, and the conecting rod was removed.

Husking and Shredding

The electric motor has been found to be practical for operating another machine which is used in a certain type of harvesting work —that of husking corn and shredding the stover. The husker is rated according to the number of rolls with which it is equipped, thus we have 2-roll, 4-roll, 6-roll, 8-roll, and 10-roll machines.

The spread of the corn borer through the east and into the eastern section of the corn belt has created a new interest in this ma-

chine which was used more extensively several years ago. Farmers in the infested area cannot put all of their corn into silos and wish to husk the remainder for grain. By husking the corn with the husker-shredder and at the same time shredding the remaining stover, it is possible to kill a large percentage of any borers which may infest the stalks. This is done by exerting pressure on the rolls so as to squeeze the stalks as they pass between them. The shredded stover is eaten more readily by livestock than the whole a part of the roughage ration, stover and it is used very often as especially when higher quality roughage is scarce.

Tests conducted at Purdue University during the winter of 1928-29 were made to determine the size of machine which could be satisfactorily operated by a 5-horsepower motor. A 2-roll and a 4-roll machine procured from the same manufacturer were used in the tests. It was found that a 5-horsepower motor was adequate for the 2-roll machine but that the 4-roll machine could be operated to only a limited capacity with the 7.5-horsepower motor.

Farm Tests

Mr. A. L. Jones of Three Rivers, Michigan, purchased a 4-roll machine of another style from the company which furnished the machines for the Purdue tests for use during the fall of 1929. He was able to obtain a considerably greater capacity with a 7.5-horsepower motor with the machine he purchased than that obtained with the other style machine of the same size used at Purdue. A 5-horsepower motor was used on Wisconsin Electro-Test farm number 20 in March, 1929, to operate a 4-roll husker in husking 1,100 baskets of corn. No figures are available from these Michigan or Wisconsin farms which might indicate whether or not the motors were carrying an excessive overload.

In the Purdue tests it was found that the capacity of a 2-roll machine was not materially increased by using a 7.5 instead of a 5-horsepower motor. The capacity with the 5-horsepower motor operating the husker was 13.2 bushels of corn husked and 0.972 tons of stover shredded per hour, while that when the 7.5 size was used was 14.5 bushels husked and 1.096 tons shredded.

Bulletins Available

Several bulletins are available pertaining to the use of electric power for operating one of the machines mentioned. Bulletin No. 332, "Electric Power for the Farm," University of Illinois, Agricultural Experiment Station, Urbana, Illinois, and the general report on "Electric Service for the Iowa Farm" from the Engineering Experiment Station of Iowa State College contain results of tests conducted on motor-driven grain elevators. Hay hoists are discussed in "Electric Hay Hoists," Bulletin No. 139 of the Agricultural Experiment Station of the State College of Washington, Pullman, Washington, "Electric Hay Hoists," Bulletin No. 255 of the Agricultural Experiment Station of Oregon State Agricultural College, Corvallis, Oregon, and Progress Report No. 4 on Rural Electrification, Bulletin No. 25 of Michigan Engineering Experiment Station, East Lansing, Michigan. A publication from the Agricultural Experiment Station of Purdue University Circular 174, "Operating Ensilage Cutters and Husker-Shredders with Electric Motors" contains results of tests on husker-shredders. In most cases single copies of these publications may be had upon request where a supply is available.

Manufacturers of grain elevators include these companies: Butler Mfg. Co., Kansas City, Missouri; John Deere Plow Co., East Moline, Illinois; Eckardt Mfg. Co., St. Paul, Minnesota; G. & D. Mfg. Co., Streator, Illinois; Kewanee Implement Co., Kewanee, Illinois; Link Mfg. Co., Fargo, N. Dak.; Meyer Mfg. Co., Morton, Illinois; Portable Elevator Mfg. Co., Bloomington, Illinois; and Sandwich Mfg. Co., Sandwich, Illinois.

Companies manufacturing feed

(*Continued on page S 15*)

By H. S. HINRICHS

FARMSTEAD wiring is a combination of building wiring for power and heat as well as light, together with an inter-building distribution system. This combination of factors brings into consideration elements of engineering layout and practice which are entirely beyond any problems incidental to city residence wiring, and calls for a higher type of wiring engineering and construction than is necessary for an ordinary house wiring job.

H. S. Hinrichs

Coupled with these facts, we find that the farmer, who is considering the wiring of his premises, has no basis by which to judge what his wiring requirements may be. Accordingly, he does not fully appreciate the important differences between the various bids which may have been presented to him. The result is that it is difficult for the reliable electrical contractor or the power company, as the case may be, to sell an adequate, safe installation at a fair price in competition with those who, either through ignorance or wilful deceit, are ready to install an inferior job at a lower price.

Worthy of Co-operation

Added to this already complex situation, there exists in some communities an unfortunate attitude of outright antagonism between power companies and contractors. Whatever the cause of this ill will and regardless of who may be to blame, the farmer is under a further handicap of trying to determine who will supply him with reliable information. Certainly, the importance of farmstead wiring is worthy of the co-operative effort of all groups concerned. As an example of how better wiring installations may be secured for farm customers through co-operation between electrical contractors and the Power Company, the experience of the Kansas Power and Light Company in the Topeka territory is interesting. In the first place, the Company does not maintain a wiring department and all wiring is done by organizations or individuals outside of the Company personnel. The Company has definitely specified certain minimum requirements as to type and size of service entrance, and that all wiring must be in accordance with the Electrical Code. These specifications are enforced within all reasonable and practicable limits. Where the customer desires a complete inspection, this can be secured through the Electrical Inspector of the City of Topeka at a nominal charge for such service.

The specifications for the entrance wiring are available in printed form for contractors and for new customers. Wherever desired, a layout of the inter-building wiring is prepared by the rural salesmen of the Company in co-operation with the farmer on the basis of the probable future needs for power. Drawings of these are furnished the customer, and to any contractor interested in bidding on the particular job. A list of reliable contractors, revised from time to time, is supplied to customers. The names of new customers are furnished those contractors who desire such service.

This co-operative plan has made it possible to improve materially the wiring standards of the farm

installation. It has not completely eliminated the incompetent wireman, but the persistent violator of reasonable standards finds it increasingly difficult to secure contracts. The reliable contractors are becoming more and more interested in the rural business.

During the first year of this cooperative plan, the proposal of the minimum specification of a 60 ampere conduit entrance required considerable selling on the part of the Rural Service Department of the Company to both customers and contractors. After two years of effort, however, this minimum is taken as a matter of course. It is interesting to note that the question of these specifications being too severe came up for discussion in approximately one per cent of the total number of installations during the year 1930. Many 100 ampere services are now being used; some services are even larger. These substantial wiring installations have been a contributing factor in the 17 per cent increase in kw. hr. sales per customer during 1930 over 1929.

"Do you want gas?" asked the dentist as he placed the patient in the chair.

"Yes," said the absent-minded professor, "about five gallons—and take a look at the oil."

Our Apologies!

In the April issue of the Merchandising Supplement, Mr. H. S. Hinrichs was designated as Chairman of the Farm Wiring Committee of the A.S.A.E. At the last annual convention of the A.S.A.E., Mr. Richard Boonstra, Agricultural Engineer of the Public Service Co. of Northern Illinois, was appointed Chairman of this important committee. We understand that real progress has been made in solving the problems of farm wiring and that a very constructive report will be made at the convention of the society in June at Ames, Iowa.

Kelvinator Corporation Reports Increased Profits for 1930

The Kelvinator Corporation of Detroit reports a net profit of $1,601,016.37 as of September 30, 1930, an increase of 31 per cent over that of 1929.

Commenting upon the statement, Geo. W. Mason, President of the Kelvinator Corporation said, "This remarkable net profit increase over the banner year of 1929 in a year that has been regarded as extremely poor, is an indication of the fundamental soundness of American business and is further evidence of the fact that there was no loss of actual wealth in the shrinkage of inflated securities during the past year. Real prosperity is a prosperity of production and distribution, not of paper loss."

Miniature Farm Display Shows Uses for Electricity on the Farm
The Detroit Edison Company has rigged up a very attractive rural electrification display in the form of a miniature farm, electrically equipped. The pump at the extreme right is operated by a small motor under the windmill and actually pumps water with electricity. A 2 volt motor operates the thresher shown in front of the barn. The house and barns are lighted by electricity to show the effect of adequate farm lighting.

BOB'S PAGE

Devoted to Merchandising of Electrical Equipment in Rural Communities

Conducted by Robt. J. Fulton

Origin of Horsepower

When James Watt began making steam engines he had to compete with horsepower. His engines could be best used at that time for hoisting coal from the mines—work that was then done by horses.

In order to get a basis for comparing the power of horses and steam engines, Watt made some tests with horses and found that a horse walking at the rate of 2½ miles an hour could raise a weight of 100 pounds continuously. That would give 22,000 foot-pounds per minute.

Being anxious to give the purchasers of his engines enough value for their money, Watt added 50 per cent to the tested horsepower, making 1 horsepower equal 33,000 foot-pounds of work per minute. This is the measure of horsepower today.

* * *

Electricity Is 200 Times Cheaper Than Candles

Lighting has progressed a long way in both efficiency and cost since the days of candles. In bygone times it would have cost $214.00 to get as much illumination as one can buy today for $1.00

The lighting expense of a reception given to George Washington in 1790 was about $10.00 per hour. Two thousand candles were used.

Is This the Electrical Age?

Some say electricity has reached its top notch in use and that now we have the electrical age. Let us analyze this age. We have only one home in three using electrical appliances and only two out of three homes are wired for electricity, and many of these inadequately.

Only 2% of railroad mileage is electrified. Industry is not motorized completely and very little has been done with electric heating.

There are more than 2,000 different electric appliances manufactured for household use, and very few are used.

Conditioning the air in homes and offices is all but unknown.

Highway lighting to avoid accidents is in its first stages.

Cost of Electricity Decreasing

Since 1914, the cost of living has gone up 70 per cent and the cost of electricity has gone down 25 per cent.

When the homes and farms are electrified, the highways lighted and homes and industries are using the devices available to them, then electricity will be so universal and so inexpensive that there will be no excuse for not using it.

Five hundred and fifty thousand new customers were recorded last year on the books of the power companies. That means 550,000 more families became dependent upon power companies for essentials of their lives: light, heat, refrigeration, cleaning, cooking, or other appliances. One hundred thousand more farms were electrified last year, which means, in many cases, that farms became dependent for their water, as well as other things, upon the power companies.

The increase in use of electricity on farms was 18 per cent; in domestic use, electricity 14 per cent. These are the largest increases taking place in any one year. Our lives would be infinitely poorer if we did not have electricity at our command.

It is said that 87 per cent of the people are influenced to buy through sight, 7 per cent through sound, 3½ per cent through smell,

1½ per cent through touch and 1 per cent through taste.

People get impressions through the eye quicker and more clearly than in any other way. And when they buy motors or other electric appliances, smelling, tasting and touching mean nothing, and sound, little or nothing. It is practically all sight. Therefore, carrying the motor or appliance itself in stock so you can demonstrate it when your prospect is in the buying humor is the first essential in making sales.

* * *

Rip Van Winkle didn't do any business for 20 years; neither will the salesman who sleeps on the job.

Illinois Rural Short Course

By E. R. Lehmann

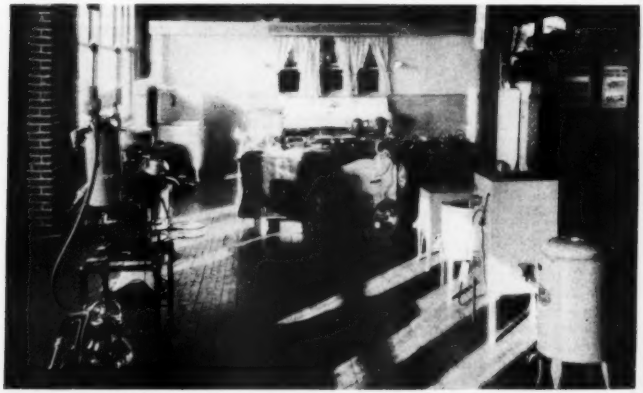
THE Rural Service men of Illinois had an opportunity during Farm and Home week Jan. 12-16, to attend lectures, take notes, inspect exhibits and study along with farmers, mutual farm problems in which electricity can play a part in solving.

There were 17 special sessions scheduled for the Rural Electrification Short Course group, by the Department of Farm Mechanics of the University, including four sessions devoted to the feed problem, three to dairying, two to poultry production, three to farm water supply and sewage disposal, three to salesmanship, one to electric hot beds, and one to seed testing. In addition, those in attendance had the unusual opportunity to hear two addresses on important agricultural topics each day by men of national reputation. The last speaker in this series was Alexander Legge.

Illinois State Affair

This short course was essentially an Illinois affair, no special effort was made to secure the attendance of rural service men from outside the state, although the course was open to all interested. There was a total of forty Illinois rural service men registered, representing nine companies which serve more than 95 per cent of the area of the state. The majority of this group did not miss a single session.

In addition to the rural service men for whom the course was primarily planned there were a number of farmers and manufacturers representatives in attendance, also a few farm advisers. The average attendance at all seventeen sessions was 62, the range being from 45 for the dis-

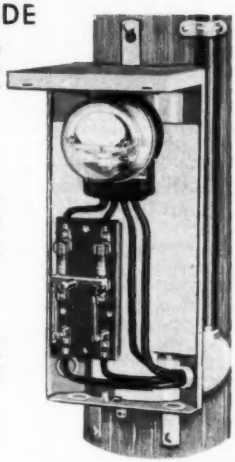


A portion of the electrical equipment on display during the Rural Short Course at the University of Illinois.

Easily Mounted and Wired

NO WASTE SPACE INSIDE

"UTILITY" Meter Boxes require no cross arm, but are attached to pole with three lag screws. Strong and rigid enough for any need.



"UTILITY"
OUTDOOR METER BOXES

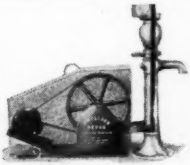
provide easy access to contents, are neat in appearance and—most important—are designed to be placed in a central location in the farm yard. This provides the most economical distribution layout.

Write for Our Special Offer

We will gladly send samples for inspection and trial. No obligation whatsoever. Just write us. (They are not sold through jobbers.)

F. D. KEES MFG. CO.
Beatrice, Nebr.

BRILLION-BEVAN



Line of
Electric Farm Equipment

Electric Pumpers
Pump Jacks
Water Systems
Electric Farm Grinders

BRILLION IRON WORKS
Brillion, Wis.

Blue Ribbon Electric Milker

A Portable Milker Requiring No Installation

The "Blue Ribbon" is a self-contained milker, requiring no pipe lines or extra equipment of any kind. It operates direct from the light socket of either high line or farm light plant. A beautiful catalog and complete information will be sent on request. Write us today.

Electric Products Corporation
7 Bluff Ave., La Grange, Ill.

cussion on daily barn ventilation to 100 on the discussion of feeding dairy cattle.

The Farm Mechanics Department made available to all rural service men a text book of bound bulletins and circulars containing information on the subjects discussed in the lectures. Many of the men in attendance took notes on all lectures very studiously because their organization required that a complete report be made for the benefit of those unable to attend. In some instances those in attendance were expected to make a complete oral report.

While some special exhibits were provided, a majority of the exhibits were a part of regular equipment of the department. The atmosphere of a commercial display, and the spirit of a convention were not in evidence. All sessions were quite fully attended.

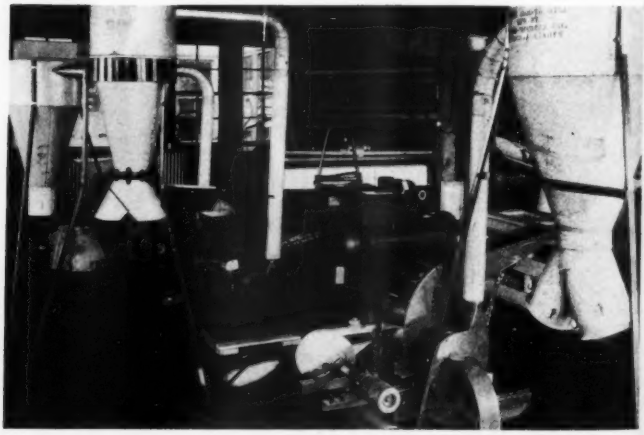
A real value of holding a rural electrification course during farm and home week along with more than thirty other competitive programs is the advertising it obtained locally and throughout the state. The farm and home advisers, farm leaders and master home makers knew that rural electrification was being emphasized, and several thousand saw exhibits which helped them to become a little more electric power conscious even though they may not have attended the special courses.

Small Circuit Breakers For Wiring Circuits

The Westinghouse Electric & Manufacturing Company have recently developed and placed on the market a circuit breaker designed to afford more complete protection to wiring circuits than obtained by the use of fuses. When fuses are employed to protect lighting and power circuits, improper sizes for the service intended are often used or else the fuse gap bridged. In such cases the circuit is very often overloaded and as a result the insulation of the wiring damaged.

With the new circuit breakers, this temptation is removed because of the ease of restoring the circuit for use again, and then too, there is no possibility of removing the protective features since they are sealed in. Another feature is the momentary overload which these circuit breakers will carry before tripping, and which does no damage to the wiring.

The circuit breakers are supplied in neat cabinets, which can be placed in a convenient place where they are readily accessible.



Feed grinding exhibit at the Rural Electrification Short Course held under the direction of the Department of Farm Mechanics, University of Illinois.

Salesmen's Forum

(*Continued from page S 8*)

grinders which may be used for elevating grain are Gehl Bros. Mfg. Co., West Bend, Wisconsin; Papec Machine Co., Shortsville, N. Y.; Prater Pulverizer Company, Chicago, Illinois; and the I. B. Rowell Co., Waukesha, Wisconsin.

Hay Hoist Manufacturers

Hay hoists are manufactured by the following: Brown Clutch Co., Sandusky, Ohio; John Farrel & Son, Newton, N. J.; Hess-Ersted Iron Works, Portland, Oregon; Ireland Machine and Foundry Co., Norwich, N. Y.; Louden Machinery Co., Fairfield, Iowa; Rochester Barn Equipment Co., Rochester, N. Y.; and Universal Hoist & Mfg. Co., Cedar Falls, Iowa.

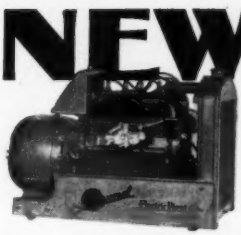
Husker-shredders are manufactured by Advance-Rumely Thresher Co., LaPorte, Indiana; Appleton Mfg. Co., Batavia, Illinois; International Harvester Co., Chicago, Illinois; Rosenthal Corn Husker Co., Milwaukee, Wisconsin; and U. S. Wind Engine and Pump Co., Batavia, Ilinois.

Manufacturers of hay presses include: Adco Mfg. Co., Columbus, Ohio; J. I. Case Threshing Machine Co., Racine, Wisconsin; Collins Plow Co., Quincy, Illinois; Dain Mfg. Co., Ottumwa, Iowa; International Harvester Co., Chicago, Illinois; Kansas City Hay Press Co., Kansas City, Missouri; Ohio Cultivator Co., Bellevue, Ohio; Sandwich Mfg. Co., Sandwich, Illinois; and Ewayne, Robinson and Company, Richmond, Indiana.

Grounding of Galvanized Roofs

The Trade Research Division, National Association of Flat Rolled Steel Manufacturers, Cleveland, Ohio, have prepared a four page illustrated folder entitled "How to Ground A Galvanized Roof Against Lightning." The purpose of the folder is to broadcast information on the proper method of grounding galvanized roofing so that property and life losses may be reduced through adequate protection from lightning causes.

NEW!



THE MOST COMPACT 4-CYLINDER PLANTS EVER BUILT. ULTRA-SMOOTH

Here at last is an electric light and power unit providing complete four-cylinder advantages in unusually small space. Ultra smoothness, flickerless light and steady power are other valuable features.

These new Universal electric plants —Series AU—are made in stationary marine and portable types. The marine type 1KW unit is only 35¼" x 20⅛" x 15¼" overall and weighs only 300 lbs. Other types are made correspondingly compact.

Series AU is made in both AC and DC models—1, 2 and 3 KW, 32-110 Volts, DC, for use with or without storage batteries—1, 2 and 3 KVA, 110-220 Volts AC. Auto-type starting and remote control as desired.

Thousands of Universal Electric Plants are in use the world over. The new, extremely compact, ultra-smooth Series AV models add still further variety to the already large Universal line. Regardless of the requirements of your prospects, you can now find just the Universal Electric Plant you need in order to sell them—any type, any capacity from 1 to 35 KW, AC and DC.

Write for further information and attractive dealer proposition to Dept. 27.

Universal MOTOR CO.

OSHKOSH, WIS., U.S.A.

Papec Launches Sales Campaign

The Papec Machine Company of Shortsville, N. Y. have launched a nation-wide sales campaign on its recently developed hay chopper-silo filler. This new method of chopping hay and blowing it into the barn immediately after curing has met with considerable success, machines having been tested by leading experiment stations, feeders and dairymen.

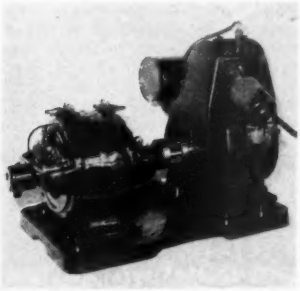
Practical farm tests and scientific station investigations alike showed that not only could chopped hay be put up actually cheaper, easier and quicker than long hay, but also that chopped hay had a very definite feeding advantage.

In addition to its ability to chop and stow away better than 10 tons per hour, this machine also serves the farmer as silo filler, grain elevator, fodder shredder and straw cutter. The outfit, completely equipped to carry out all five operations, sells for a little more than a standard silo filler of the same throat dimensions.

Kato Light and Power Plants Made in Four Sizes

Alternating current light and power plants, manufactured by the Kato Engineering Company of Mankato, Minnesota, may be had in four capacities; 350, 600, 1,000 and 2,000 watts. The plant consists of a single cylinder, four cycle, air cooled gasoline engine coupled direct to an alternating current generator operating at a speed of 1,800 r.p.m. Because of their air cooled engine, they are applicable for either interior or exterior installation.

The current generated is 110 volt 60 cycle A. C. which makes possible the use of all standard electrical appliances. The plant is also equipped with a filtering system whereby A. C. radio equipment may be used with interference reduced to a minimum.



The Kato Light and Power Plant

Motors for Hazardous Locations

The Master Electric Company of Dayton, Ohio, is manufacturing an explosion resisting motor for gasoline filling stations which has been approved by the Underwriters Laboratories for class group D, which classification covers using in gasoline vapor and air mixtures or lacquer solvent and air mixtures. The motor is furnished in either polyphase or single phase design and may be supplied with an explosion resisting switch as an integral part of the motor, or without switch.

Trade Literature Received

Master Geared-Head Motors—Circular literature giving details on parallel and right angle shaft Master Geared-Head motors.

Century—Roth Motor—Generator Sets—Literature describing and illustrating Century-Roth motor-generator sets and split phase motors. These motor-generator sets are built for applications where the kind of current or voltage, or both, needed differs from those ordinarily available and constructed in two or four bearing types. The division of the Century Electric Company is located at 1806 Pine St., St. Louis, Mo., while Roth Brothers & Company are located at 1400 W. Adams St., Chicago, Ill.

COMING MEETINGS

NATIONAL ELECTRIC LIGHT ASSN. Annual convention City Auditorium, Atlantic City, N. J., June 8-12, 1931.

AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS. Twenty-fifth national convention June 22-25, 1931 at Iowa State College, Ames, Iowa.

NATIONAL ASSN. OF FARM EQUIPMENT MANUFACTURERS. Thirty-eighth annual convention October 21-23, 1931 at Chicago, Ill.

AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS. (North Atlantic Sec.) F. L. Rimbach, Chairman, Rural Electrification Comm.; O. B. Stichter, Secy. Next meeting at New Brunswick, N. J. Date to be announced later.